AUA 2021

1. Stabilization of the myocardium during life threatening Hyperkalemia associated with loss of P waves and widening of the QRS complex on the EKG is best accomplished using:

A. IV. calcium gluconate.
B. IV. sodium bicarbonate.
C. 10% glucose with regular insulin.
D. Potassium exchange resin with sorbitol.
E. Hemodialysis.
ANSWER=A

Severe hyperkalemic cardiotoxicity must be treated immediately, not by lowering serum potassium concentration alone, but by preventing cardiac excitability and antagonizing the cardiotoxic effects of hyperkalemia. Thus, I.V. calcium gluconate is the initial treatment of choice. This must be followed by measures to immediately lower serum potassium since the duration of calcium effects are brief. Bicarbonate and glucose should be given next, but they are short-acting and exchange resins or dialysis should be planned for more long-term treatment.

2. If the inferior mesenteric artery is ligated, the artery that maintains blood supply to the rectum is:

A. superior mesenteric.
B. ileocolic.
C. middle sacral.
D. external iliac.
E. hypogastric.
ANSWER=E

Blood supply to the rectum arises proximally from the superior rectal artery, which branches from the inferior mesenteric artery, and distally from the middle and inferior rectal arteries. When the inferior mesenteric artery is ligated, blood supply to the rectum is maintained by the middle rectal artery, which is a branch of the anterior division of the internal iliac (hypogastric) artery, and the inferior rectal artery, a branch of the internal pudendal artery also arising from the anterior division of the hypogastric artery. The superior mesenteric, ileocolic, middle sacral, and external iliac arteries do not provide blood supply to the rectum.

3. Three years after placement of an artificial urinary sphincter with initial good results for post-prostatectomy incontinence, a 55-year-old man has recurrent incontinence. Examination of the device and cystoscopy suggests normal cycling and no cuff erosion. The next step is:

A. deactivate device for a two-month trial period.
B. alpha-blocker therapy.
C. antimuscarinics.
D. urodynamics.
E. surgical exploration for repair or replacement.
ANSWER=D

Urethral atrophy results from chronic compression of the corpus spongiosum by the cuff and is the leading cause of urinary incontinence in this setting. However, urodynamic evaluation may reveal detrusor overactivity or decreased bladder compliance. Deactivation will not permit improved sphincter function. Surgical exploration is not indicated if the cause of the incontinence is unrelated to the device (i.e., detrusor overactivity or impaired compliance). Alpha-blockers would not be expected to have any effect on urinary incontinence in this case regardless of the underlying cause. Antimuscarinics would not treat causes of incontinence related to device malfunction. Treatment options for this patient, if he indeed has recurrent stress incontinence, would include downsizing the cuff or moving the cuff to a more proximal or distal location.

4. A 59-year-old man on active surveillance for Gleason 3+3=6 prostate cancer with a stable PSA of 5.1 ng/mL has intraductal carcinoma on repeat biopsy. He prioritizes maintenance of sexual function. The next step is:

A. PSA in six months.
B. MRI scan in one year.
C. repeat biopsy in one year.
D. whole gland cryosurgery.
E. nerve-sparing radical prostatectomy.
ANSWER=E

Intraductal carcinoma of the prostate is an aggressive lesion for which immediate treatment, rather than active surveillance, is recommended. Thus, obtaining PSA in six months or waiting one year for an MRI scan or repeat biopsy would not be advised as these approaches risk delay in definitive therapy. Further, while limited data exist regarding the optimal treatment modality for intraductal carcinoma, whole gland cryosurgery likely represents undertreatment, particularly given the young age of the patient. Moreover, whole gland cryosurgery may significantly impact erectile function, such that AUA Guidelines state, "clinicians should inform localized prostate cancer patients considering whole gland cryosurgery that erectile dysfunction is an expected outcome". Among the management options listed, although nerve sparing radical prostatectomy poses risk to erectile function, it represents the optimal approach. XRT would also be an acceptable treatment option. If XRT is given with androgen deprivation, the risk of early/intermediate sexual dysfunction increases.

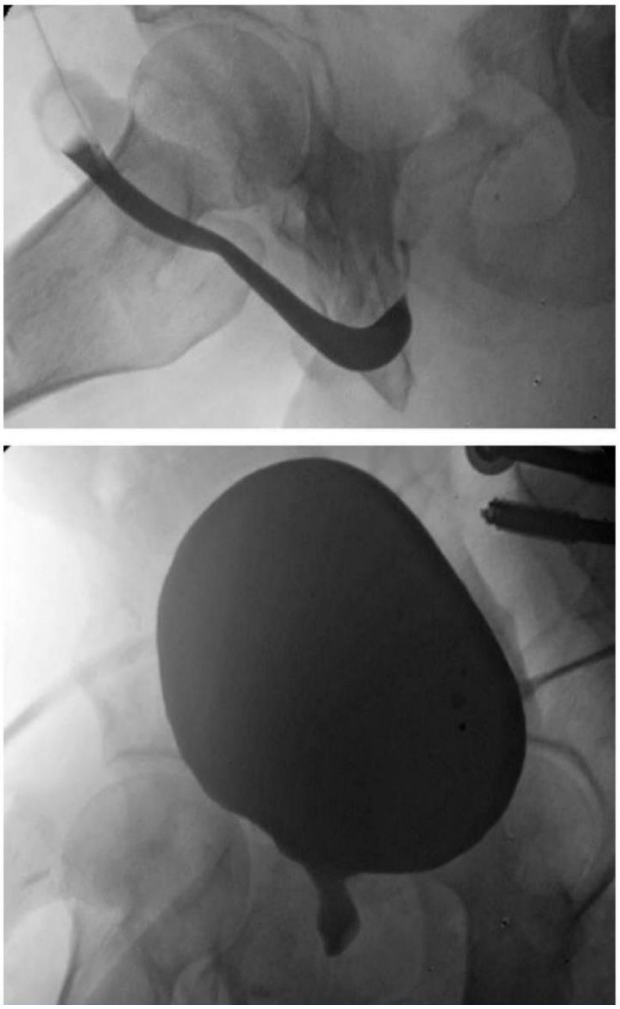
5. The renal toxicity of IV. Iodinated contrast material is due to:

A. glomerular injury.
B. afferent arteriolar constriction.
C. efferent arteriolar constriction.
D. intrarenal vasoconstriction and tubular necrosis.
E. efferent arteriolar dilation and tubular necrosis.
ANSWER=D

Three key risk factors that may provoke iodinated contrast-induced renal injury include pre-existing renal dysfunction (serum creatinine > 1.6 mg/dL or estimated GFR < 60 mL/min/1.73m2), pre-existing diabetes, and reduced intravascular blood volume. Contrast agents evoke renal injury by two mechanisms: first, by acting as an intrarenal vasoconstricting agent resulting in decreased intrarenal blood flow and hypoxemia; second, by a direct toxic effect of the contrast agent on tubular epithelial cells. The combination of renal medullary ischemia and direct cellular toxicity leads to increased renal epithelial cell apoptosis and acute tubular necrosis. The osmolality of the contrast agent once believed to be of paramount importance in the induction of contrast-induced nephropathy has been shown to play a minimal role in contrast-induced nephropathy. Indeed, recent studies have found that viscosity of the contrast agent is more important than osmolality. These findings resulted in the recommendation that periprocedural hydration along with limiting the amount of contrast agent are the key to preventing contrast-induced renal damage. A recent meta-analysis to evaluate the various interventions employed for prevention of this complication (assessing sodium bicarbonate solutions, adenosine antagonists [theophylline], N-acetylcysteine, and ascorbic acid) noted mixed results with no definitive proof that these agents could prevent the complication. Randomized control studies have, however, shown that in patients with a creatinine of > 3.5 mg/dL, prophylactic hemodialysis prior to and following the study can reduce the risk of this complication.

6. A 19-year-old with a pelvic fracture-related urethral injury undergoes endoscopic realignment. Three months after catheter removal, he has a weak stream. Retrograde urethrogram and VCUG are shown. The next step is:

A. urethral dilation.
B. internal urethrotomy.
C. anastomotic urethroplasty.
D. buccal mucosa graft urethroplasty.
E. penile skin flap urethroplasty.



ANSWER=C

The images demonstrate a posterior urethral stricture. Anastomotic urethroplasty offers high success rates for urethral stenosis that occurs after urethral disruption injury due to pelvic fracture. Dilation and urethrotomy are potential options for first time treatment of short anterior urethral strictures, but not for posterior disruption injuries. Substitution urethroplasties, whether with buccal mucosa or penile skin flaps, are not appropriate when there is no lumen to augment, as in pelvic fracture urethral disruption. AUA Guidelines recommend anastomotic urethroplasty given the high success rates and the very low success rates of endoscopic management.

7. Ten days after an abdominal hysterectomy for cervical cancer, a 64-year-old woman has leakage of urine and purulent material from the vagina. A cystogram is normal, but a retrograde pyelogram demonstrates a left ureterovaginal fistula and marked hydronephrosis. The right upper tract is normal. The next step is IV. antibiotics and:

A. percutaneous nephrostomy tube.
B. ureteral stent placement.
C. vaginal cuff drain placement.
D. ureteroneocystostomy.
E. transureteroureterostomy.

ANSWER=B

In the present case, the ureteral obstruction is not complete, as retrograde injection of contrast outlines the proximal ureter. Placement of a ureteral stent may result in resolution of the fistula. If retrograde placement is not successful, an antegrade approach can be undertaken. A percutaneous nephrostomy tube can be considered if stent placement is unsuccessful from either approach. If the fistula does not resolve after stent drainage, surgical repair would be indicated. There is no consensus as to the timing of surgical repair, though many would consider waiting at least four to six weeks after the initial surgery in order to optimize local tissue quality for healing. If surgical repair is necessary and she has a distal ureteral injury, then ureteroneocystostomy would likely be sufficient. A transureteroureterostomy would not be the initial repair for ureterovaginal fistula. Placement of a vaginal drain would not address the primary issue of the fistula.

8. A 22-year-old woman is evaluated for microscopic hematuria. Abdominal films demonstrate bilateral nephrocalcinosis with fine flecks of calcium appearing in most papillae. Renal function is normal. The most likely diagnosis is:

A. distal RTA.
B. idiopathic hypercalciuria.
C. Fanconi syndrome.
D. proximal RTA.
E. hyperparathyroidism.

ANSWER=A

Nephrocalcinosis occurs primarily in children and young adults with distal RTA. This is characterized by impaired hydrogen ion excretion in the distal collecting duct. It rarely occurs in proximal RTA which results from an impairment in proximal tubular bicarbonate reabsorption or in Fanconi syndrome where excessive amounts of amino acids are excreted along with organic anions, such as citrate, which tend to prevent calcium precipitation. Idiopathic hypercalciuria and primary hyperparathyroidism rarely cause nephrocalcinosis, but when present, the acidification defect found in distal RTA usually coexists.

9. A 48-year-old woman develops a vesicovaginal fistula one week after vaginal hysterectomy. Cystoscopy shows a 5 mm area of erythema just cephalad to the trigone. Bilateral retrograde pyelograms are normal. Although vaginal leakage of urine persists, the majority of urine is voided normally. The next step is:

A. fulgurate fistula.
B. bilateral nephrostomy tubes.
C. immediate fistula repair.
D. urethral catheter drainage.
E. suprapubic cystostomy.

ANSWER=D

In this patient, a trial of conservative management using urethral catheter drainage is indicated because of the small size of the fistula and the brief interval after the surgery. Given that the patient has no prior history of XRT or pelvic surgery, tissues should be adequately vascularized and capable of healing. Bilateral nephrostomy tubes to divert the urine drainage is more invasive and would not provide additional benefit over bladder drainage alone for a vesicovaginal fistula (VVF). Similarly, a suprapubic cystostomy does not offer benefit over a urethral catheter. There is little data to support fulguration of a VVF. Should catheter drainage fail, early repair may be done using a vaginal approach.

10. In a man with low-risk prostate cancer, the genomic test which provides an estimate of adverse pathologic features is:

A. Oncotype Dx®.
B. Decipher®.
C. Prolaris®.
D. Confirm MDx®.
E. Mitomic®.

ANSWER=A

A variety of commercially available biopsy-based genomic tests are available in prostate cancer. Oncotype Dx® (mRNA expression in 17 genes) was developed to predict the likelihood of Gleason 4+3=7 or extracapsular extension at prostatectomy. Decipher® (mRNA expression of 22 genes) and Prolaris® (mRNA expression of cell cycle progression genes) predict the likelihood of metastasis or cancer-specific mortality. Confirm MDx® (epigenetic evaluation of hypermethylation in three genes) and Mitomic® (mitochondrial DNA) evaluate prostate tissue from

a negative biopsy to predict the likelihood of cancer on a subsequent biopsy.

11. A two-month-old girl with a lumbar myelomeningocele had a febrile UTI. After therapy, videourodynamics show bilateral grade 5 VUR, a trabeculated bladder, leakage around the 7 Fr urodynamics catheter at a volume of 40 mL, and a detrusor pressure of 50 cm H20. The next step is:
A. vesicostomy.
B. incontinent ileovesicostomy.
C. antibiotics and oxybutynin.
D. augmentation and bilateral ureteral reimplants.
E. bilateral ureteral reimplants and CIC.
ANSWER=A
This patient has high-grade VUR and a small trabeculated bladder with reduced capacity and poor compliance. This is combined with high urethral resistance. Antibiotics alone, with or without ureteral reimplantations, would be inadequate therapy. With grade 5 VUR, a bladder volume of only 40 mL (which would predominantly be made up of the volume of the upper tracts) and poor compliance with adequate urethral outlet, ureteral reimplantation without correction of the poor bladder compliance would be inadequate with a high risk of VUR recurrence. CIC may be helpful for the short-term; however, very poor compliance would make catheterization alone inadequate. Augmentation with ureteral reimplants and CIC or ileovesicostomy may ultimately be the therapy of choice but is not the best therapy for a two-month-old. Vesicostomy would provide temporary effective therapy.

12. A 15-year-old sexually active boy has urethritis, confluent red papules with a yellowish scale on the glans penis, arthritis of the knees, and uveitis. The best initial treatment of the skin lesions is:
A. intramuscular penicillin G.
B. systemic retinoids.
C. topical steroids.
D. topical podophyllin.
E. oral doxycycline.
ANSWER=C
This boy has reactive arthritis (formerly Reiter's Syndrome) which includes urethritis, genital skin lesions similar to those of psoriasis, arthritis, and inflammatory disease of the eye (uveitis). The skin lesions alone are difficult to distinguish from psoriasis, but the complex of symptoms is specific for reactive arthritis. The etiology is unknown but may be triggered by infection and is likely genetic as almost all affected patients have the HLA-B27 haplotype. Initial treatment is usually with topical steroids. If symptoms persist, systemic retinoids or even methotrexate may be needed. Oral or I.V. antibiotics are not indicated for this patient. Podophyllin is useful in treating genital warts but would not be beneficial in this patient.

13. A 53-year-old man with a history of cyclophosphamide chemotherapy has clot urinary retention. He continues to require daily blood transfusions despite cystoscopic fulguration and catheter clot evacuation. Alum irrigations and percutaneous nephrostomy drainage have been unsuccessful. A cystogram shows no VUR. The next step is:
A. 2-Mercaptoethane sulfonate (mesna).
B. 10% formalin bladder irrigations.
C. 10% formaldehyde bladder irrigations.
D. cystectomy.
E. 1% formalin bladder irrigations.
ANSWER=E
Formaldehyde is a gas that can be dissolved in water. The maximum dissolution is 37% formaldehyde in an aqueous solution. In other words, 100% formalin equals 37% formaldehyde solution. This solution is then diluted to give an appropriate concentration of formalin. Since formaldehyde is a gas, it is not instilled into the bladder until it is dissolved in water yielding formalin. Typically, one starts with a low concentration (1%) of formalin bladder irrigations. If this fails, subsequent irrigations can be increased to higher concentrations. However, prior a cystogram should be performed to exclude VUR, and if reflux is found, ureteral occlusion balloons should be placed. Patients should be aware of potential postoperative pain, decreased bladder volume, and marked urinary urgency and frequency. Cystectomy should be reserved for situations that do not respond to less aggressive measures. Mesna has been utilized for prophylaxis of cyclophosphamide-induced hemorrhagic cystitis but is not therapeutic once cystitis has developed.

14. A 35-year-old man with C5 quadriplegia is managed with a condom catheter. He has recurrent febrile UTIs and episodes of autonomic dysreflexia. CMG reveals a detrusor LPP of 60 cm H20 at 150 mL, detrusor-external sphincter dyssynergia, and a residual of 75 mL after reflex bladder contraction. The next step is:
A. observation.
B. CIC.
C. antimuscarinic medication.
D. external sphincterotomy.
E. male sling.
ANSWER=D
Suprasacral spinal cord injury is often a management dilemma, as it may present with both storage and emptying failure. If bladder pressures are suitably low, or can be safely lowered by various means, the issue can be treated as an emptying failure and CIC may be used. This man, on the other hand, has several issues that require intervention including a high detrusor LPP which puts his upper urinary tracts at risk, recurrent UTIs and autonomic dysreflexia (AD). Observation may result in upper tract compromise and do not address his recurrent UTIs or AD; thus, is not a viable option at this time. Since he is a high quadriplegic, CIC is typically not feasible for these patients unless there is a caregiver or family member who are able to perform regular CIC. Additionally, his functional bladder capacity is only 150 mL, therefore, CIC alone would be inadequate. Antimuscarinic medication alone would also not be helpful since it would not address the dyssynergia or issues with incomplete emptying. A male sling would increase his outlet resistance and do nothing to reduce the impact of his bladder on the upper urinary tract. An external sphincterotomy can be used in these men to decrease the outlet resistance and lower the detrusor LPP. This would also likely address his issues with AD and recurrent UTI and he can continue to manage his bladder with the condom catheter; thus, avoiding the need for CIC in a patient who does not have the manual dexterity to perform that task.

15. A 76-year-old asymptomatic woman has a urine culture showing >100,000 Klebsiella CFU/mL. Treatment with amoxicillin may:
A. reduce mortality.
B. reduce morbidity.
C. increase mortality.
D. increase morbidity.
E. increase risk of stone formation.
ANSWER=D
Prospective randomized trials comparing antimicrobial versus no therapy in elderly male and female nursing home residents with asymptomatic bacteriuria consistently document no benefit of antimicrobial therapy. There was no decrease in symptomatic episodes and no change in survival. In fact, treatment with antimicrobial therapy was associated with increased morbidity including increased occurrence of adverse drug effects, reinfection with resistant organisms, and increased cost of treatment. Therefore, asymptomatic bacteriuria in elderly patients should not be treated with antimicrobial agents. There is no increased risk of stone formation when treating with amoxicillin.

16. A seven-year-old boy with prostatic alveolar rhabdomyosarcoma undergoes chemotherapy per the Children's Oncology Group protocol, but has residual mass on a post treatment CT scan. Biopsy confirms mature rhabdomyoblasts. The next step is:

A. observation.
B. salvage chemotherapy.
C. XRT.
D. radical prostatectomy.
E. pelvic exenteration.

ANSWER=A

Residual mass, as in this case, does not imply viable tumor and does not correlate with outcome. Mature rhabdomyoblasts or stroma on biopsy may be safely observed with repeat imaging. Tumor cells may differentiate and mature into rhabdomyoblasts as in this case. Neither salvage chemotherapy nor XRT is required. Excision of the mass or pelvic exenteration are not required when only rhabdomyoblasts are present.

17. Seven years after cystectomy and ileal conduit for bladder cancer, a 66-year-old woman has bilateral hydroureteronephrosis. CT scan has no evidence of cancer recurrence and urine cytology is negative. Serum creatinine is 1.8 mg/dL. Loopogram and renogram are shown. The next step is:

A. looposcopy.
B. bilateral percutaneous nephrostomy.
C. stomal revision.
D. revision of left ureteroileal anastomosis.
E. left nephroureterectomy.

"Image not available from the source"

ANSWER=E

This patient has developed upper tract deterioration following cystectomy and ileal conduit diversion. This has been reported in some series to occur in over 50% of patients with long-term follow-up. The renogram in this instance demonstrates no obstruction to the right renal unit with hydronephrosis likely the result of chronic reflux. The renogram also demonstrates no significant function of the left renal unit. Because there is no reflux into the left system, it cannot be monitored as to the possible development of upper tract urothelial carcinoma. In this setting, nephroureterectomy is recommended. Looposcopy will not add to the evaluation, as it will not provide access to the left system. Bilateral percutaneous nephrostomy is not indicated because there is no evidence of obstruction of the right side. Similarly, there is no evidence of stomal stenosis, as the conduit is not dilated or elongated. Revision of the left ureteroileal anastomosis should not be undertaken for a non-functioning kidney. Another option would be left nephrostomy tube placement, antegrade studies, and selective cytology to further risk stratify the patient prior to making a final decision.

18. Three months following an abdominoperineal resection, a 62-year-old man has persistent urinary retention managed with CIC. Cystoscopy reveals trilobar prostatic enlargement. Creatinine and PSA are normal. CMG reveals no detrusor overactivity, Pdet of 15 cm H2O at a maximal cystometric capacity of 350 mL, and no increase in detrusor pressure noted when given permission to void. The next step is:

A. continue CIC.
B. finasteride.
C. tamsulosin.
D. Rezum™.
E. TURP.

ANSWER=A

Patients who have undergone an abdominoperineal resection are at risk for developing denervation of not only their bladder but also the urethral sphincter mechanisms. This patient has a mild loss of compliance with an end fill pressure of 15 cm H20 at a capacity of 350 mL. A loss of compliance can be a concern in regards to renal damage, but at that pressure his upper urinary tracts are not at risk. In addition, the lack of a detrusor contraction suggests that is the cause of his urinary retention and not bladder outlet obstruction. Additionally, denervation of the smooth muscle in the area of the bladder neck and membranous urethra places these patients at considerable risk for incontinence following transurethral resection of the prostate. Because of the possibility of urinary incontinence following TURP or Rezum™, the preferred management of this patient is continued CIC. Neither finasteride nor tamsulosin will be effective in the absence of effective detrusor contractions.

19. A 72-year-old man with recurrent nephrolithiasis has a positive voided cytology nine months after Ureteroscopic laser ablation of a 7 mm right upper tract urothelial carcinoma. Retrograde pyelograms are normal and bladder and prostatic urethral biopsies are negative. Ureteroscopic biopsies demonstrate CIS in the right proximal and midureter. GFR is 44 mL/min/1.73 m2. The next step is:

A. ureteroscopic laser ablation.
B. ureteral stent insertion and intravesical BCG.
C. percutaneous nephrostomy tube insertion and antegrade BCG.
D. ureterectomy with Boari flap reimplantation.
E. nephroureterectomy.

ANSWER=C

Given the patient's history of both chronic kidney disease as well as recurrent nephrolithiasis, efforts for nephron preservation would be advised in this setting. Nephroureterectomy would not represent the best option, particularly in the absence of high-grade papillary disease. At the same time, ureteroscopic laser ablation is not likely to be successful here, given the often multifocal nature of CIS and the difficulty in accurately identifying CIS ureteroscopically. Instead, initial treatment with topical therapy would offer an opportunity for nephron preservation and would treat the entire urothelium of the ipsilateral upper tract. In particular, percutaneous (antegrade) instillation through a nephrostomy tube has been associated with relatively high rates of renal preservation, particularly for patients with CIS of the upper tract. On the other hand, attempting to establish VUR with stent insertion has been noted to be an unreliable method to achieve exposure of the upper urinary tract to intravesical instillation. Meanwhile, although Boari flap reconstruction may be able to reach even the proximal ureter and thereby facilitate reconstruction after proximal ureterectomy, this approach risks disease recurrence in the remaining upper tract urothelium given the often-multifocal nature of CIS.

20. A 32-week-gestation neonate in the NICU for respiratory difficulties is found to have Candida albicans on two successive catheterized urine cultures. He is voiding spontaneously and his renal and bladder ultrasound is normal. The next step is:

A. repeat urine culture in one week.
B. circumcision.
C. intravesical amphotericin.
D. parenteral fluconazole.
E. parenteral amphotericin.

ANSWER=D

The incidence of nosocomial candidal UTIs occurring within neonatal intensive care units is common and directly related to the use of parenteral antibiotics. In this select patient population, aggressive treatment of asymptomatic candiduria is required due to a high incidence of subsequent candidemia. Indeed, in some published series, failure to treat asymptomatic candiduria in premature neonates resulted in systemic candidemia in up to 80% of patients, therefore, observation is not the correct option. Isolating treatment to the bladder with topical irrigation will not effectively minimize the risk of candidemia, and thus parenteral

treatment is required. Fluconazole is the treatment of choice in a premature infant when compared to amphotericin because of significantly diminished systemic side effects. Circumcision will not decrease the risk of candidemia.

21. A 53-year-old diabetic man sustains a minor proximal crural perforation during primary implantation of a three-piece inflatable penile prosthesis via a penoscrotal approach. The best management is:
A. abort the procedure.
B. secure exit tubing of the ipsilateral cylinder.
C. extend corporotomy for primary repair.
D. place a malleable implant.
E. direct closure via perineal approach.
ANSWER=B
A common intraoperative complication with penile prosthesis surgery is crural perforation. If this occurs with insertion of an inflatable device with attached tubing, placing a tunica albuginea closure suture on either side of the exit tubing to keep the cylinder in place works well and does not require a more extensive repair. The "suture sling" involves placement of a nonabsorbable polypropylene stitch with a needle attached to both ends. The needle can be carefully placed in the very proximal end of the cylinder or through the rear tip extender. After placement of the cylinder in the appropriate corporal space and applying traction on the distal insertion string for proper placement, the suture is brought out through each side of the tunica just distal to the input tube exit and the sling suture is tied firmly over the corporotomy closure. A more significant perforation injury, including damage to the urethra, would require termination of the procedure. Placement of a malleable prosthesis is not advised as it is more likely to erode.

22. A 27-year-old pregnant woman in her third trimester has urinary frequency and dysuria. Physical examination demonstrates suprapubic tenderness but no flank discomfort. Urine culture is positive for pan-sensitive E. coli. She should be treated with:
A. tetracycline.
B. trimethoprim/sulfamethoxazole.
C. amoxicillin.
D. ciprofloxacin.
E. nitrofurantoin.
ANSWER=C
Penicillin and penicillin derivatives have been proven to be the safest antibiotics for use during pregnancy. Aside from allergy, there are no other known contraindications. Nitrofurantoin is usually safe but there is a risk of maternal neuropathy and hemolysis in a fetus with relative G6PD deficiency. Nitrofurantoin should only be used during the first two trimesters of pregnancy due to the risks of hemolytic anemia in the neonate. Trimethoprim/sulfamethoxazole should be avoided during pregnancy, as folic acid antagonists are known teratogens. Tetracycline is contraindicated due to adverse effect on the fetus (tooth discoloration and dysplasia). Ciprofloxacin should not be used during pregnancy due to its effects on developing cartilage.

23. A 48-year-old man has a two-week history of low back pain and difficulty voiding. Physical examination reveals an absent bulbocavernosus reflex and loss of perineal sensation. Imaging reveals a L4-L5 disc protrusion. The most likely distribution of his neural injury is:
A. parasympathetic alone.
B. sympathetic alone.
C. pudendal alone.
D. parasympathetic and pudendal.
E. sympathetic and pudendal.
ANSWER=D

24. A 48-year-old woman with ESRD has a history of low-grade Ta urothelial carcinoma treated by TURBT one year ago. Since then, all cystoscopies have been normal. The recommended cancer free waiting time period from her last negative cystoscopy before proceeding with renal transplantation is:
A. no delay necessary.
B. one year.
C. two years.
D. five years.
E. none, transplant is contraindicated.
ANSWER=A
The cancer-free waiting time for renal transplant recipients is generally measured from the time of last treatment and depends primarily upon the risk of cancer recurrence. The presence of a low-grade, non-invasive urothelial carcinoma of the bladder should not delay transplantation.

25. A 30-year-old man with fever of 39.2° C undergoes incision and drainage of a perineal abscess and administration of broad spectrum IV. antibiotics. The next morning, urine starts to drain from the wound with voiding. The next step is:
A. CT urogram.
B. cystoscopy.
C. urethral catheter.
D. suprapubic cystostomy.
E. surgical repair.
ANSWER=D
Urethrocutaneous fistulae associated with periurethral and/or perineal abscess is most commonly due to underlying inflammatory urethral stricture and secondary UTI. At the time of presentation, multiple periurethral sinuses and pockets might be found resulting in a dense local inflammatory phlegmon. Urethral instrumentation in the face of active infection and a likely stricture is ill-advised due to the risk of bacteremia, sepsis, and potential worsening of the inflammatory process. Suprapubic cystostomy with aggressive incision and drainage should be performed in order to relieve the local infection. This can be followed by urethral reconstruction at a delayed interval. A CT urogram would not be helpful unless there was indication of upper tract issues.

26. When using an omental flap for repair of a vesicovaginal fistula, the artery on which the vascular pedicle of the omentum is based is the:
A. right gastroepiploic.
B. left gastroepiploic.
C. superior mesenteric.
D. gastric
E. splenic.
ANSWER=A
The right and left gastroepiploic arteries provide the sole blood supply to the omentum. An omental flap should be preferentially based on the right gastroepiploic artery. The pedicle is mobilized off the stomach from the left. This will result in a well vascularized and sufficiently long flap. The right gastroepiploic is a larger vessel than the left gastroepiploic, and its origin is somewhat caudal as compared to the left, allowing a shorter course into the deep pelvis. The superior mesenteric, gastric, and splenic arteries do not supply the omentum.

27. A 30-year-old calcium stone former reports fatigue one month after starting hydrochlorothiazide for hypercalciuria secondary to renal calcium leak. The next step is:
A. check serum calcium and phosphorous.
B. check serum sodium and potassium.
C. liberalize intake of sodium chloride.
D. increase fluid intake.
E. switch from hydrochlorothiazide to indapamide.
ANSWER=B

Weakness, muscle cramps and fatigue are common side effects of thiazide therapy, and often can be avoided simply by starting at a low dose and gradually increasing it. These symptoms may be due to diuretic-induced hypokalemia or hyponatremia. In this clinical scenario, potassium and sodium levels should always be checked. If there is hypokalemia, treatment may be with potassium supplements or switching to a combined thiazide - potassium sparing diuretic preparation. If there is hyponatremia, treatment includes cessation of thiazide use, cation repletion, and oral fluid restriction. If severely symptomatic hyponatremia occurs, 3% IV. saline solution may be indicated. It is unlikely that serum calcium and phosphorous will reveal new information in the setting of previously diagnosed renal calcium leak. Liberalization of sodium chloride and increasing fluid intake will reduce the effectiveness of the thiazide diuretic. Indapamide is not an improvement over hydrochlorothiazide in terms of hypokalemia risk.

28. One month after endovascular aortic repair (EVAR) for an aortic aneurysm, a 62-year-old man has the CT scan shown. Serum creatinine is 0.8 mg/dL. The next step is:
A. surveillance.
B. MRI scan of the abdomen and pelvis.
C. percutaneous biopsy of periureteral fibrosis.
D. corticosteroids and tamoxifen.
E. bilateral ureterolysis.

"Image not available from the source"

ANSWER=A
The case illustrates the ureteral involvement in patients with chronic peri-aortitis. There is a time-dependent regression of peri-aortic fibrosis after aneurysm exclusion, usually requiring at least four to six months, and the regression rate may be slow but persistent. To what extent the use of corticosteroids in some patients contributed to outcomes of interest is unclear. Tamoxifen has been used with some success as an alternative to steroids for peri-ureteral fibrosis but is not indicated here. A systematic review of the literature indicates that in terms of regression of peri-aortic fibrosis, surgical aneurysm repair is superior to EVAR. Persistent peri-aortic fibrosis occurs in 14% of patients treated with open surgical aneurysm repair. After EVAR, up to 40% of patients will not have resolution of peri aortic fibrosis. In this case, diagnostic testing (MRI scan or biopsy) to exclude malignancy is not indicated because of the presence of the aneurysm. Bilateral ureterolysis is not indicated this early in the disease course.

29. Despite six months of behavioral modification and pelvic floor physiotherapy, a 52-year-old woman has persistent urinary frequency, urgency, and urgency incontinence. Physical examination demonstrates urine leakage with cough and a POP-Q of: Aa:-1, Ba:-1, C:-6, D:-7, Ap:-2, and Bp:-2. The next step is:
A. antimuscarinic medication.
B. incontinence pessary.
C. periurethral bulking.
D. midurethral sling.
E. autologous fascial sling.
ANSWER=A
This patient has mixed urinary incontinence. Although stress incontinence is demonstrated on physical examination, this is not her primary complaint. Therefore, it is more appropriate to start with a treatment to address urgency urinary incontinence (antimuscarinic) and not stress incontinence (bulking agent, slings). An incontinence pessary is not indicated as it is meant to address stress incontinence via urethral compression. Additionally, she does not have prolapse symptoms and only mild anterior wall descent on exam. If she does not improve with pharmacotherapy, urodynamics would be helpful to better clarify bladder and urethral function as well as the etiology of leakage before proceeding to more invasive treatments.

30. A 54-year-old woman who underwent intestinal bypass surgery 15 years ago for obesity has passed 15 calcium oxalate stones. A 24-hour urine collection reveals a volume of 850 mL, PH 5.2, decreased calcium, sodium, citrate, and magnesium, and markedly elevated oxalate levels. Medical management should consist of increased fluid intake and:
A. calcium citrate.
B. magnesium citrate.
C. potassium citrate and calcium citrate.
D. calcium carbonate and magnesium citrate.
E. sodium bicarbonate and magnesium citrate.
ANSWER=C
Intestinal bypass surgery results in a urine profile similar to that of chronic diarrheal syndrome, characterized by low urine volume, acidic urine, hypocitraturia, hyperoxaluria and low serum sodium, magnesium and calcium levels. Correction of the acidosis with potassium citrate will additionally correct the hypocitraturia since calcium citrate alone is typically not enough to correct the hypocitraturia and acidosis. A liquid formulation of potassium citrate may be needed if tablet formulation is poorly absorbed due to rapid intestinal transit. Calcium supplementation will not only raise urine calcium but will also complex intestinal oxalate that is typically over absorbed in states of bowel disease or intestinal resection. Although magnesium is poorly absorbed (similarly to calcium and sodium), magnesium supplementation is generally not advised because of the tendency of magnesium compounds to cause diarrhea. Any formulation of calcium supplementation is acceptable, although calcium citrate has been shown to have superior gastrointestinal absorption.

31. A contraindication to cytoreductive nephrectomy for metastatic RCC is:
A. progression of disease during initial systemic therapy.
B. vena caval thrombus.
C. involvement of the contralateral adrenal gland.
D. gross hematuria.
E. pulmonary metastases.
ANSWER=A
Cytoreductive nephrectomy as part of a multidisciplinary approach to metastatic RCC has been shown to prolong survival in two historic randomized clinical trials among patients treated with interferon. However, its use in the current era of significantly more effective systemic therapies has been debated. What has emerged regarding use of cytoreductive nephrectomy is that proper patient selection is crucial. One particularly adverse prognostic factor for disease-related mortality after cytoreductive nephrectomy is progression of disease during initial systemic therapy. As such, patients initially treated with systemic therapy who experience disease progression should be considered for an alternative systemic therapy rather than surgical resection. Meanwhile, neither pulmonary metastases nor contralateral adrenal involvement are contraindications to cytoreductive nephrectomy. In fact, isolated adrenal metastases may be amenable to local treatment (resection, ablation) while patients with pulmonary-only metastases often have a prolonged indolent clinical course, such that in both scenarios, durable survival after cytoreductive nephrectomy is possible. Gross hematuria also does not represent a contraindication to cytoreductive nephrectomy, and, in fact, significant local symptoms from the primary tumor (i.e., severe flank pain, persistent gross hematuria) represent one indication to perform cytoreductive nephrectomy, considering as well a patient's age and performance status. Likewise, the presence of a tumor thrombus is not a contraindication to cytoreductive nephrectomy and may be a deciding factor for surgery in select patients. Indeed, tumor thrombus may cause significant patient morbidity (i.e., lower extremity edema) and may with continued growth be an imminent source of mortality.

Responses of tumor thrombus to systemic tyrosine kinase inhibitors have been found to be minimal, while the response to newer, checkpoint inhibitor therapies remain to be determined.

32. A 72-year-old man with castration-resistant prostate cancer and bony metastases is placed on abiraterone 1000 mg QD and prednisone 5 mg twice daily. After one month of therapy, he experiences fatigue, nausea, and anorexia, despite objective clinical improvement in his bone metastases. The next step is:
A. histamine-2 blocker.
B. magnesium supplementation.
C. megestrol acetate.
D. increase dose of prednisone.
E. switch to enzalutamide.
ANSWER=D
Abiraterone is a CYP-17 inhibitor indicated for men with newly diagnosed metastatic castration-sensitive or metastatic castration-resistant prostate cancer. Due to CYP-17 blockade of glucocorticoid and androgen production, adrenal precursors such as ACTH are preferentially shunted to produce excess mineralocorticoids, which can lead to hypokalemia, hypertension, and lower extremity edema. Hypokalemia can lead to weakness, nausea and vomiting, and anorexia. Abiraterone is typically administered with prednisone 5 mg twice daily to counteract the potential mineralocorticoid excess. ACTH excess and related symptoms can occur even with administration of low-dose prednisone with abiraterone. Megestrol acetate is a progestin that, in addition to suppressing gonadotropins, also inhibits ACTH secretion and can be used as an appetite stimulant. Hypomagnesemia is not a common side effect of abiraterone. Switching therapy to enzalutamide would not be indicated as he is otherwise responding to the abiraterone other than the side effects. A histamine (H2) blocker would not be indicated as the symptoms are unlikely due to GERD or gastritis.

33. When performing fluoroscopy, the action that will most effectively lower the patient's radiation exposure is to:
A. move the image intensifier closer to the patient.
B. move the x-ray tube closer to the patient.
C. use electronic magnification.
D. use tight collimation.
E. increase kVp.
ANSWER=A
The source of the radiation exposure is the x-ray tube. The closer the patient is to the x-ray tube, the higher the rate of exposure to radiation. The image intensifier should be kept as close to the patient as practical to limit radiation dose. Tight collimation will not change the entrance dose rate but does limit the scatter of x-ray (limits exposure for others in the room besides the patient). Electronic magnification has no effect on entrance dose rate. Increased kVp will increase both the penetrability and intensity of radiation at the skin entrance, thus increasing patient exposure.

34. A 25-year-old man hears a snap during intercourse, without loss of erection. He awakens the next morning with penile pain and on examination has penile shaft and scrotal ecchymosis. He has a normal stream and no hematuria. The next step is:
A. observation.
B. penile MRI scan.
C. penile duplex Doppler ultrasound.
D. urethrography.
E. penile exploration.
ANSWER=A
A genuine penile fracture involves a tear in the tunica albuginea. The injury will invariably result in acute loss of erection due to blood rapidly exiting the affected corpus cavernosum. This will in turn lead to the classically described eggplant deformity as well as frequently observed deviation of the phallus to the side opposite the tunical tear because of the resultant hematoma and mass effect. The fact that he was able to complete intercourse suggests that the clinical scenario in this case is not a penile fracture. The described ecchymosis indicates blood trapped beneath Colles' fascia, again suggesting that no penile fracture has occurred. It is likely that the patient tore a subcutaneous penile vein from excessive torquing of his penis while erect. There was no evidence of hematuria or LUTS; therefore, there is no indication for urethral evaluation with urethrography or cystoscopy. MRI scan and penile exploration are unnecessary as the described clinical scenario will resolve spontaneously.

35. A 53-year-old woman has a 3.5 cm right adrenal mass. Her medications include lisinopril and amitriptyline. Her blood pressure is 142/93 mmHg. Fasting plasma metanephrine is 1.2 nmol/L (normal < 0.3 nmol/L). The next step is:
A. 24-hour urine for metanephrines.
B. stop lisinopril and repeat plasma metanephrines.
C. stop amitriptyline and repeat plasma metanephrines.
D. start labetalol.
E. start phenoxybenzamine.
ANSWER=C
The patient has an adrenal mass and a metabolic evaluation that shows a mildly elevated plasma metanephrine. In this setting, the presence of a falsely elevated fasting metanephrine should be excluded. Common reasons for a false positive metanephrine testing include taking stimulants, such as caffeine and nicotine, as well as medications that interfere with epinephrine metabolism, such as tricyclic antidepressants and drugs that interfere with the assay such as acetaminophen. Thus, repeating the testing once the patient has been off amitriptyline, a tricyclic antidepressant, for one to two weeks would be recommended. Of note, ACE inhibitors do not interfere with assays for metanephrine. Performing a 24-hour urine while the patient remains on a tricyclic antidepressant is also likely to give a false-positive result. Phenoxybenzamine, an alpha-blocker medication, would be indicated for treatment after a diagnosis of pheochromocytoma has been confirmed, while labetalol, a beta-blocker.

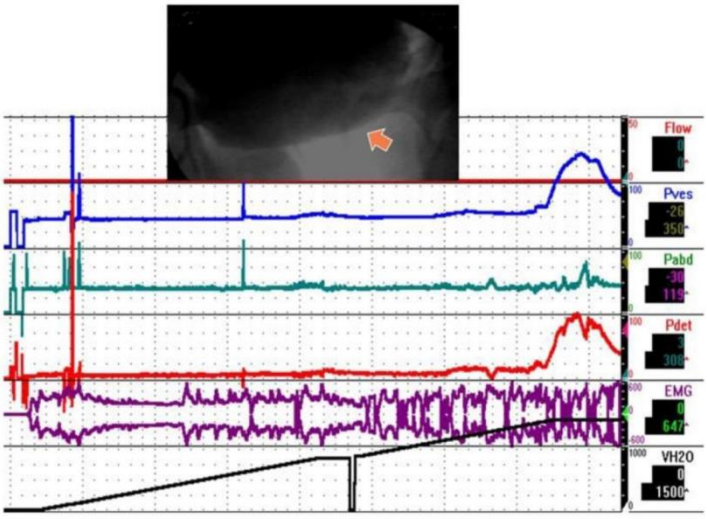
36. A 63-year-old man previously treated with pelvic XRT for colon cancer undergoes radical prostatectomy. Four weeks after surgery, a 3 cm rectourethral fistula is noted. The next step is catheter drainage and:
A. bowel rest.
B. fecal diversion and bilateral percutaneous nephrostomy tubes.
C. transrectal fistula repair.
D. transabdominal fistula repair.
E. fecal diversion and staged fistula repair.
ANSWER=E
The incidence of rectourethral fistula after radical retropubic prostatectomy is 1-2%. The risk of a fistula increases with a prior history of pelvic XRT, rectal surgery, or TURP. Fistulas generally occur at the vesicourethral anastomosis and are often due to unrecognized rectal injury at the time of surgery. Although single and staged repairs have been described, staged repairs are recommended in cases of large fistulae and those associated with XRT, uncontrolled local or systemic infection, immunocompromised states, or inadequate bowel preparation at the time of definitive repair. Conservative treatment with urethral catheterization is unlikely to be successful for large fistulae in the setting of prior XRT.

37. A 22-year-old man has erectile dysfunction following penile trauma. His examination is unremarkable and Doppler ultrasound reveals a peak systolic velocity of 42.27 cm/s and an end-diastolic velocity of -7.72 cm/s. The most likely cause of his erectile dysfunction is:
A. arterial insufficiency.
B. venous leak.

C. psychogenic.
D. Peyronie's disease.
E. arteriovenous fistula.
ANSWER=C
This patient's ultrasound findings are normal; he does not have arterial insufficiency or venous leak. Arterial insufficiency is suggested when the peak systolic velocity is < 25 cm/s. Venous leak is suggested when the end-diastolic velocity is > 5 cm/s. His examination does not suggest a plaque consistent with Peyronie's disease. Many young men have psychogenic erectile dysfunction after penile trauma and temporary support using a PDE-5 inhibitor will often allow confidence restoration with normalization of erectile function without medication use in the long-term. Patients with arteriovenous fistula will not have a negative end-diastolic velocity.

38. Prolapse of a vesicostomy is best avoided by:
A. limiting the stoma size to no larger than 24 Fr.
B. resecting excess bladder wall tissue.
C. placing the stoma at the bladder dome.
D. circumferential suturing of bladder to rectus fascia.
E. placing the stoma midway between the symphysis pubis and the umbilicus.
ANSWER=C
When the bladder dome is brought out for the vesicostomy, it effectively immobilizes the posterior wall of the bladder, preventing its prolapse out the vesicostomy stoma. The bladder dome can be reliably identified by seeing and dividing the urachal remnant. Resecting bladder tissue is contraindicated to facilitate future undiversion. Size of stoma, excess bladder tissue, and suturing the bladder to the rectus fascia will not prevent prolapse. Placement of the stoma is predicated on the position of the dome of the bladder rather than location on the abdominal wall.

39. Despite tamsulosin and solifenacin, a 27-year-old man has progressive severe urgency and frequency. Videourodynamics with fluoroscopic images are shown. The arrow shown in the image points to the bladder neck during voiding phase. The next step is:
A. cervical and cranial MRI scan.
B. retrograde urethrogram.
C. pelvic floor muscle training.
D. TUIP.
E. neuromodulation.



ANSWER=D
The patient has primary bladder neck obstruction, noted by a closed bladder neck during attempt to void and elevated voiding pressures with low flow rate. Further neurological evaluation is not warranted in this setting but might be if the obstruction were more distal at the level of the sphincter (suggesting detrusor external sphincter dyssynergia). Pelvic floor muscle training (PFMT) will not be helpful in this setting as pelvic floor dysfunction is not noted (fluoroscopically, the obstruction would be at the level of the pelvic floor, much more distally). Neuromodulation would not be indicated in the setting of obstruction. TUIP is generally favored over TURP in a young man due to a lower incidence of retrograde ejaculation.

40. Alpha-mercaptopropionylglycine prevents cystine stones by:
A. promoting a diuresis.
B. alkalinizing the urine.
C. decreasing cystine excretion.
D. forming drug-cystine complexes.
E. increasing available urinary citrate.
ANSWER=D
Alpha-mercaptopropionylglycine (Thiola®) is a second-line therapy for prevention of cystine stones after starting alkalinization therapy. This drug can increase cystine solubility in urine by formation of a more soluble mixed-disulfide bond (i.e., drug to cystine complex rather than cystine to cystine complex). It does not promote diuresis, alkalinize the urine, decrease cystine excretion or increase available urine citrate.

41. A 26-year-old woman has a 2 cm, circumferentially calcified saccular aneurysm on renal arteriography. Her blood pressure is 126/82 mmHg and her creatinine is 1.1 mg/dL. She is considering pregnancy. The next step is:
A. observation.
B. serial imaging.
C. lisinopril.
D. endovascular stent.
E. surgical repair.
ANSWER=E
Pregnancy is a risk factor for renal artery aneurysm rupture, regardless of size or calcification, therefore, observation and serial imaging are not recommended. If this were not a woman of child-bearing age, the aneurysm could be followed, as it is not large and is completely calcified. Lisinopril will not reduce the likelihood of rupture or ischemic damage. An endovascular stent is not recommended for someone in this age group, due to the risk of lifelong anticoagulation therapy. She should be counseled to undergo surgical treatment of her aneurysm prior to becoming pregnant.

42. A random urine culture in a 70-year-old asymptomatic woman after cystectomy and ileal conduit diversion reveals >100,000 Proteus species. The next step is:
A. observation.
B. repeat urine culture.
C. antibiotic therapy.
D. Loopogram.
E. non-contrast CT scan.
ANSWER=C
Approximately three quarters of urine specimens from ileal conduits are culture positive; nevertheless, most adults show no ill effects when exposed to chronic bacteriuria. Deterioration of the upper tracts is more likely when the culture becomes dominant for Proteus or Pseudomonas, and thus, these patients should receive antibiotic therapy to reduce the incidence of stone formation. Those patients with mixed cultures may generally be observed, provided they are not symptomatic. Another urine culture would not provide additional information nor alter the treatment plan. Further imaging in this asymptomatic patient, with either loopogram or CT scan, is not indicated.

43. The most likely neurologic deficit following nerve injury at the time of laparoscopic varicocelectomy is:
A. numbness on the base of the penis and anterior scrotum.
B. numbness on the anterior thigh.
C. numbness on the lateral thigh.
D. inability to extend the knee.

E. inability to adduct the thigh.
ANSWER=B
Laparoscopic varicocelectomy is a minimally invasive option for management of varicoceles. The genitofemoral nerve lies directly atop the psoas muscle in close proximity to where the gonadal vessels are ligated during this procedure. Approximately 4-5% of patients undergoing laparoscopic varicocelectomy will complain of either temporary or permanent alterations in the sensory innervation of the anterior thigh consistent with injury to the genitofemoral nerve. The genitofemoral nerve arises from L1-L2, emerges from the psoas, passes posterior to the ureter, and divides into the genital and femoral branches above the inguinal ligament. The femoral branch then passes behind the inguinal ligament and enters the femoral sheath. The genital branch enters the inguinal canal close to the internal inguinal ring to supply the cremaster muscle and the scrotal skin. The ilioinguinal nerve (numbness on the base of the penis and anterior scrotum) and lateral femoral cutaneous nerve (numbness on the lateral thigh) run at least 3 cm lateral to the internal ring and, therefore, should be at little risk during routine laparoscopic varicocelectomy. The obturator nerve (inability to adduct the thigh) is medial and caudal to the iliac vessels and should not be injured during varicocelectomy. The femoral nerve (inability to extend the knee) is deep in the psoas muscle. It can be injured during open surgery with retraction, but injury is unlikely during laparoscopic surgery.

44. An 80-year-old woman with a history of estrogen receptor negative breast cancer has dysuria and urinary frequency. Urine cultures and cytology are negative. Physical examination demonstrates normal pelvic organ support and vaginal atrophy. The next step is:
A. estradiol vaginal ring.
B. oral estrogen.
C. betamethasone cream.
D. solifenacin.
E. amitriptyline.
ANSWER=A
While the efficacy and safety of systemic estrogen administration has been hotly contested by results of the Women's Health Initiative and the HERS study, local vaginal estrogen administration can improve both urgency and dysuria in women with genitourinary symptoms of menopause (GSM). Systemic estrogens are contraindicated in women with a history of breast cancer. One approach is to use low dose vaginal estrogen cream or tablets two to three times per week or insert a ring containing estradiol as there are minimal increases in systemic estrogen concentrations. Amitriptyline and antimuscarinics, such as solifenacin, should be used with caution in the elderly due to possible cognitive side effects. Little or no data is available on the efficacy or safety of corticosteroids in the treatment of dysuria and urgency in women with atrophic vaginitis.

45. One year after radical cystectomy, a 62-year-old man undergoes urethrectomy for poorly differentiated squamous cell carcinoma of the urethra with invasion of the corpus spongiosum. Surgical margins are negative. Physical examination of the inguinal regions is normal. The next step is:
A. surveillance.
B. XRT.
C. chemotherapy.
D. sentinel lymph node biopsy.
E. bilateral inguinal lymphadenectomy.
ANSWER=A
Most urethral recurrences are diagnosed within two years following radical cystectomy. After cystectomy, periodic surveillance of the male urethra with urethral wash cytology can identify tumors at an earlier stage than simply awaiting patient symptoms. Lymphatics from the anterior urethra drain into the superficial and deep inguinal lymph nodes and occasionally into the external iliac nodes. llioinguinal lymphadenectomy is indicated in the presence of palpable inguinal lymph nodes without evidence of metastatic disease. This patient has high-grade pT2 disease and is at risk for recurrence. However, unlike penile cancer, benefit from prophylactic inguinal node dissection, XRT, or chemotherapy has not been demonstrated in squamous cell carcinoma of the urethra. The current role of sentinel biopsy in this context is not defined.

46. A 25-year-old woman has recurrent pan-sensitive E. coli UTIs with urgency and frequency but no fever. The next step is:
A. post-coital voiding.
B. cranberry supplement.
C. daily ciprofloxacin.
D. abdominal ultrasound.
E. cystoscopy.
ANSWER=B
In women with recurrent uncomplicated symptomatic UTIs, prophylactic options include cranberry supplements or antibiotic prophylaxis. If the recurrent UTIs are related to intercourse, post-coital antibiotics are indicated. Appropriate antibiotics include trimethoprim/sulfamethoxazole, nitrofurantoin, and cephalexin. Fluoroquinolones should be reserved for instances of bacterial resistance or allergy and should be avoided if possible due to the black box warning. Strategies such as post-coital voiding, changing to cotton underwear, wiping away from the urethra, and avoidance of hot tubs have not been shown to decrease the rate of infections. Cystoscopy and imaging (i.e., abdominal ultrasound) should not be routinely obtained in women with uncomplicated recurrent UTIs.

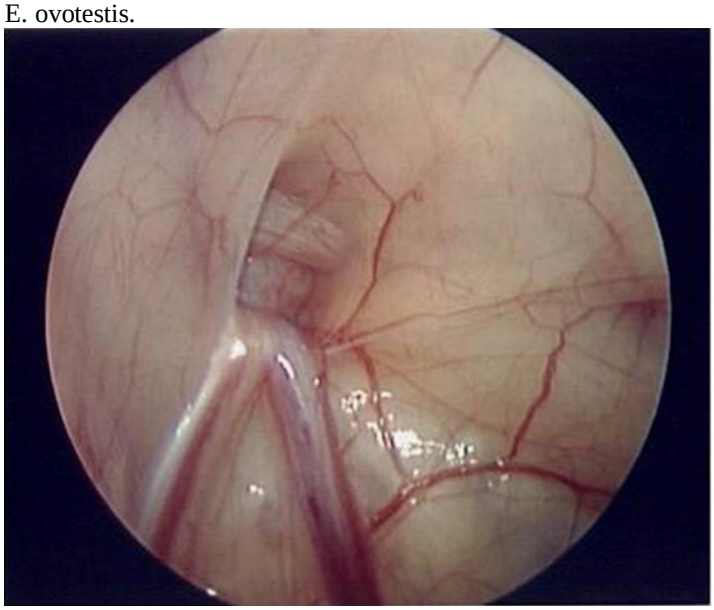
47. A 38-year-old woman with a history of stones is taking topiramate for migraine headaches. A 24-hour urine collection will most likely demonstrate:
A. hypercalciuria.
B. hyperuricosuria.
C. hypocitraturia.
D. hyperoxaluria.
E. hypomagnesuria.
ANSWER=C
Patients started on topiramate (used for migraines, seizure disorder, weight loss and many other indications) develop hypocitraturia and should be counseled on the inherent risks of stone formation, particularly prior stone formers. Treatment options include potassium citrate or stopping topiramate and finding an alternative treatment. Hypercalciuria, hyperuricosuria, hyperoxaluria, and hypomagnesuria are not specific to topiramate therapy.

48. A 40-year-old woman with spina bifida has an ileal conduit and ESRD. She is scheduled for a living-related donor transplant. A retrograde loopogram shows mid-loop stenosis and an aperistaltic loop that is significantly shortened. The transplant ureter should be anastomosed to the:
A. native bladder.
B. original ileal conduit.
C. original ileal conduit revised at the time of transplantation.
D. new ileal conduit created prior to transplantation.
E. new ileal conduit created at the time of transplantation.
ANSWER=D
The purpose of the preoperative transplant evaluation is to determine the suitability of the urinary bladder or its substitute. A retrograde loopogram is necessary to assess the urinary conduit for areas of stenosis and to ensure that it empties appropriately. Renal transplantation into intestinal conduits have been successful. Since the loopogram shows that her present conduit does not function well, she will need a new conduit. This should be done prior to transplantation to ensure that the conduit loop is adequate. The native bladder has been defunctionalized and is

unlikely to have a reasonable low-pressure capacity in this patient with neurogenic bladder dysfunction. If a conduit is created at time of transplant, there is an increased risk of bowel spillage or anastomotic leak that would increase post-transplant complications.

49. A 53-year-old woman has urine leakage with sneezing and exercise despite pelvic floor muscle training. On physical examination, after voiding, she has no significant prolapse and no leakage with cough or Valsalva. The next step is:
A. full bladder stress test.
B. urodynamics.
C. antimuscarinic therapy.
D. periurethral injection.
E. midurethral sling.
ANSWER=A
This patient has symptomatic stress urinary incontinence (SUI), though none is noted on examination. She should not be treated invasively without documentation of SUI on examination. She should return for a full bladder stress test done supine and repeated standing if necessary. If that remains negative, urodynamics could be offered to try to better delineate her leakage. Antimuscarinics should not be offered in the presence of primarily SUI symptoms.

50. A six-month-old boy has proximal hypospadias, a right nonpalpable testis, and a normal sized left scrotal testis. Karyotype is 46, XY. Laparoscopic view of the right internal inguinal ring is shown. The most likely finding at inguinal exploration is:
A. testicular agenesis.
B. testicular nubbin.
C. undescended testis.
D. streak gonad.
E. ovotestis.



ANSWER=C
When a testis is not palpable, the most common finding at exploration is an abdominal testis or a "peeping" testis at the internal inguinal ring (shown in the laparoscopic picture with vas deferens and testicular vessels entering an open internal ring). It is likely that the increased intra-abdominal pressure forced the abdominal testis into the inguinal canal through the open internal ring. Less common is a vanishing testis, nubbin, or an extra-abdominal location not palpated due to body habitus. There is no evidence for mixed gonadal dysgenesis (streak gonad) or ovotesticular disorder of sex development in this patient and both are far less common than simple cryptorchidism.

51. A 59-year-old man with a history of liver transplantation has a 1 cm raised, tender, penile lesion at the coronal sulcus dorsally. Incisional biopsy reveals Kaposi's sarcoma. The next step is:
A. decrease immunosuppression.
B. topical 5-FU.
C. local excision.
D. CO2 laser ablation.
E. partial penectomy.
ANSWER=A
Kaposi's sarcoma is the 2nd most common malignancy of the penis (after squamous cell carcinoma) due to the prevalence of HIV infection. It also occurs in patients on immunosuppression for organ transplantation or other indications. In this setting, Kaposi's sarcoma often regresses with modification of the immunosuppressive regimen and this should be the initial approach. If the tumor fails to respond to these efforts, local excision, laser ablation, or XRT should be considered. Partial penectomy is not indicated for this tumor type. 5-FU is typically utilized in squamous cell carcinoma of the penis.

52. A 57-year-old woman has urine leakage with exercise and a vaginal bulge. On examination, she leaks with cough and POP-Q reveals: Aa:-2, Ba:-2, Ap:+2, Bp:+2, and C:0. The next step is a midurethral sling:
A. only.
B. with anterior repair.
C. with posterior repair.
D. with anterior and apical vault repair.
E. with posterior and apical vault repair.
ANSWER=E
Her POP-Q examination reveals both posterior wall prolapse (Bp:+2 indicates the most distal portion of the posterior vaginal wall is 2 cm beyond the hymen) and apical prolapse (C at 0 indicates the vaginal cuff at the level of hymen). Therefore, a posterior and apical vault repair should be performed concomitantly at the time of midurethral sling. A sling alone will only address her incontinence and not her prolapse. An anterior repair is not indicated as her anterior wall is well-supported. A posterior repair alone would not address her apical prolapse.

53. A 55-year-old woman with breast cancer has a 3.5 cm right adrenal nodule. The nodule has an attenuation of 25 Hounsfield units on non-contrast CT scan, with 80% washout on contrast-enhanced CT scan. The lesion is most likely a:
A. lipid rich adenoma.
B. lipid poor adenoma.
C. myelolipoma.
D. breast cancer metastasis.
E. primary adrenal cancer.
ANSWER=B
The majority (approximately 70%) of adrenal adenomas contain high intracellular lipid content (lipid rich adenomas) and as such are characterized on non-contrast CT scan by Hounsfield units < 10. Similarly, myelolipomas contain macroscopic fat and are, thereby, associated with low, and even negative, Hounsfield units. Approximately 30% of adenomas have a lower lipid content, and are known as lipid poor, or atypical adenomas. Consistent with the low lipid content, the Hounsfield units of these lesions on non-contrast CT scan is > 10. However, lipid poor adenomas can usually be distinguished from malignant lesions (i.e., primary adrenal cancers, adrenal metastases) on imaging by assessing the washout of contrast on CT scan with delayed imaging. In particular, an absolute percent washout (enhanced delayed/ enhanced-unenhanced) of > 60% - as in the case here – is indicative of an adenoma. On the other hand, the majority of malignant lesions, including most primary adrenal and metastases, typically have a < 60% washout on CT scan.

54. In the setting of high-risk penile cancer, the indication to perform deep inguinal lymph node dissection at the time of surgery is based upon the presence of:

A. high-grade primary tumor.
B. corporal invasion.
C. palpable inguinal nodes.
D. superficial nodal metastases confirmed by frozen section.
E. lymphovascular invasion in the primary tumor.
ANSWER=D
Both superficial inguinal and modified complete dissections have been proposed as staging tools for patients with penile cancer without palpable inguinal lymphadenopathy. Superficial node dissection involves removal of those nodes superficial to the fascia lata. A deep dissection includes removal of those nodes deep to the fascia lata contained within the femoral triangle. The deep dissection is performed if the superficial nodes have confirmed nodal metastases at surgery by frozen-section analysis. The rationale for superficial dissection is that positive nodes deep to the fascia lata have not been reported unless superficial nodes were also positive. The presence of lymphovascular invasion, tumor grade, and tumor stage are all prognostic indicators of nodal invasion and thus help to determine which patients should undergo superficial inguinal node dissection. However, they do not directly impact the extent of the dissection. The presence of palpable nodes is indicative of the presence of cancer approximately 40% of the time (5-65% depending on risk); thus, the decision to perform a deep dissection should depend on histological confirmation of the presence of tumor by frozen section.

55. A 54-year-old man suffers a complete spinal cord injury at vertebral level L2. Once the spinal shock phase has ended, videourodynamics would most likely show:
A. normal detrusor contractility.
B. volitional control of the external urethral sphincter.
C. detrusor external sphincter dyssynergia.
D. a competent bladder neck.
E. detrusor overactivity.
ANSWER=D
An injury below vertebral level L1 would result in a sacral spinal cord injury. At this level, injury would be expected to leave the patient with detrusor hypocontractility related to loss of parasympathetic innervation of the detrusor smooth muscle, lack of volitional control of the external sphincter, and potential development of stress urinary incontinence or overflow incontinence related to sphincteric weakness. However, the bladder neck would be expected to remain competent. Complete lesions above the sacral cord usually result in detrusor overactivity, smooth sphincter synergy, and striated sphincter dyssynergia.

56. A three-week-old circumcised boy has a normal renal ultrasound and VCUG after a febrile UTI. Six months later, he develops another febrile UTI. A repeat renal ultrasound is normal. The next step is:
A. observation.
B. diuretic MAG-3 renal scan.
C. nuclear VCUG.
D. prophylactic antibiotics.
E. cystoscopy.
ANSWER=C
For the initial evaluation of febrile UTIs in infants, a fluoroscopic VCUG should be performed, especially in boys. This will not only reveal VUR but also may delineate any bladder or urethral pathology. Upper tract imaging (most commonly using a renal and bladder ultrasound) can define any obstructive etiology causing hydronephrosis. A normal renal ultrasound, however, does not rule out VUR. Up to 30% of initial VCUGs can miss VUR. If an infant has another febrile UTI after the first negative evaluation, a repeat VCUG is warranted. A nuclear VCUG is associated with less radiation and may be more sensitive in detecting low-grade VUR. It is controversial whether prophylactic antibiotics in the absence of an anatomically defined problem is beneficial or harmful. An aggressive evaluation of infants with recurrent febrile UTIs is important to minimize the risk of renal scarring, thus observation is not recommended. Given two normal renal ultrasound studies, diuretic MAG-3 scan is unlikely to reveal any useful information. Cystoscopy is unwarranted.

57. A 12-year-old boy with a history of CAH has painful bilateral testicular masses confirmed on ultrasound. The next step is:
A. antibiotics.
B. increase corticosteroids.
C. fine needle aspiration of testis.
D. bilateral partial orchiectomy.
E. abdominal pelvic CT scan.
ANSWER=B
The association between testicular tumors/nodules and CAH has been recognized for many years and are defined as testicular adrenal rest tumors (TART). Tumors are considered to be aberrant adrenal tissue that has descended with the testes and has become hyperplastic due to ACTH stimulation. The recommended treatment of TART consists of increasing the glucocorticoid dose to suppress ACTH secretions. Biopsy and or removal is not indicated unless increasing medical therapy fails. Antibiotics and abdominal pelvic CT scan are not indicated.

58. A 22-year-old man with NSGCT completed chemotherapy that included ifosfamide two weeks ago. He has weakness and lethargy, but appears euvolemic. Serum labs reveal Na 137 mEq/L, Cl 135 mEq/L, CO2 12 mEq/L, K 2.7 mEq/L, and creatinine 0.9 mg/dL. Blood gas reveals serum pH 7.3. Urinalysis reveals pH 7.6. The next step is:
A. I.V. Ringer's lactate.
B. I.V. D5W with 20 mEq/L KCI.
C. I.V. hydrocortisone.
D. oral spironolactone.
E. oral potassium citrate.
ANSWER=E
The clinical presentation is that of weakness and lethargy following the course of chemotherapy accompanied by significant hypokalemia and hyperchloremic metabolic acidosis. Despite the acidosis, his urinary pH is alkaline, indicating inability to acidify urine. The most likely diagnosis is a drug-induced renal tubular acidosis (RTA) type 1 (distal), in which there is a failure of ammonium secretion in the distal tubule. Type 2 (proximal) RTA represents a defective reabsorption of bicarbonate in the proximal tubule. Although distal RTA can be genetic, this most likely represents an acquired condition due to ifosfamide chemotherapy. The treatment is oral potassium and bicarbonate supplementation. I.V. fluid hydration is unnecessary with no evidence of dehydration and normal creatinine with no evidence of contraction alkalosis. The use of steroids or diuretics would be detrimental to this patient.

59. A ten-year-old boy has a1 cm ureteral stricture distal to the iliac vessels that was identified three months after a complex ureteroscopic stone extraction. The next step is:
A. stent placement.
B. balloon dilation and stent placement.
C. endoureterotomy and stent placement.
D. ureteral reimplantation.
E. ureteroureterostomy.
ANSWER=D
A distal ureteral stricture in a ten-year-old boy should be managed with a definitive therapy that has a nearly 100% long-term success rate. Passive dilation with a stent, balloon dilation, and endoscopic incision have variable results and do not give durable life-long success. A distal stricture can be managed with a reimplantation with or without bladder mobilization. A ureteroureterostomy is not indicated given the proximity of the stricture to the bladder.

60. A 25-year-old man has persistent left flank pain after a left ureteral reimplant with a Boari flap. CT scan demonstrates a dilated left renal pelvis. A MAG-3 diuretic renogram with a urethral catheter demonstrates a left T1/2 of 20 minutes with a differential function of 40%. The next step is:
A. VCUG.
B. ureteral stent.
C. ureteroscopy.
D. percutaneous nephrostomy tube.
E. Whitaker test.
ANSWER=A
Hydronephrosis may be due to obstruction or VUR. Ureteral reimplants with a Boari flap are often not tunnelled, and VUR must be considered in symptomatic patients. VUR may result in an equivocal T1/2 on a diuretic renogram, as in this case. A urethral catheter should be placed in those at risk for VUR prior to the study. Ureteroscopy would not define whether physiologic obstruction is present. A Whitaker test may determine if obstruction is present but is more invasive and should be reserved for difficult cases in which diuretic renography does not define obstruction or cannot be utilized because of impaired renal function. The placement of a nephrostomy tube alone will not define functional obstruction. Similarly, placement of a ureteral stent will not help with the diagnosis.

61. A 65-year-old woman with stress-predominant mixed urinary incontinence has worsening of her OAB symptoms three months following midurethral sling. Urinalysis is normal. Urodynamics are shown. The likely cause of her symptoms is:
A. natural progression of OAB.
B. outlet obstruction.
C. mesh erosion into her bladder.
D. mesh erosion into her urethra.
E. voiding dysfunction.

"Image not available from the source"

ANSWER=B
This patient's symptoms are likely secondary to an obstructing midurethral sling. The argument for the sling causing bladder outlet obstruction include the temporal relationship of her symptoms worsening after sling placement as well as evidence of obstructed voiding on the pressure-flow study (high pressure/low flow). The pressure flow nomogram places this patient in the "equivocal" category; however, it is important to realize that these nomograms are meant for male patients. Women void with lower pressures; therefore, these types of nomograms will underestimate female bladder outlet obstruction. There are various definitions of female bladder outlet obstruction with many using Qmax at 12 mL/sec or less and voiding pressure > 25 cm H20. Though voiding dysfunction caused by the failure of pelvic floor muscles to relax appropriately is another potential cause for bladder outlet obstruction, the timing suggests that this patient's symptoms are likely related to an obstructing sling. In addition, without concomitant EMG measurements or fluoroscopic views during the voiding phase, voiding dysfunction cannot be diagnosed. Mesh erosion into her bladder or urethra is unlikely given her normal urinalysis; however, any patient undergoing sling incision in a situation such as this should undergo cystoscopy prior to surgical intervention to evaluate for (*Incomplete explanation from the source*).

62. A 42-year-old man sustains a high velocity pelvic gunshot wound with no obvious ureteral injury at exploration. Two days later during a second look operation for bleeding, a minor distal ureteral contusion is identified. Intravenous indigo carmine does not reveal a urine leak. The next step is:
A. observation.
B. cystoscopy and stent placement.
C. percutaneous nephrostomy.
D. ureteroneocystostomy.
E. debridement and ureteroureterostomy.
ANSWER=B
The patient has a ureteral contusion to the distal ureter following a high velocity gunshot wound. There is no evidence of devitalized tissue or a urine leak. Cystoscopy and ureteral stent placement is the best option for a minor contusion. Ureteral reimplant is the best treatment option for a distal ureteral injury if a large contusion or devitalized tissue is identified. Ureteroureterostomy of the distal ureter is never indicated. Percutaneous nephrostomy would divert the urine; however, without a stent in place across the location of the contusion, the ureter would be at risk for stricture formation. Observation is not indicated as the ureter may become obstructed from the contusion.

63. A 17-year-old boy underwent left radical orchiectomy for a 5 cm pT2 NSGCT. He has a 2.5 cm para-aortic node and no other visible metastases. Initial markers reveal an AFP of 7,000 IU/mL and a normal beta-hCG. Two weeks later, his beta-hCG is normal and his AFP is 5,000 IU/mL. The next step is:
A. repeat tumor markers in two weeks.
B. three cycles BEP.
C. four cycles etoposide and cisplatin.
D. four cycles of BEP.
E. RPLND.
ANSWER=D
This patient has T2N2M0S2 NSGCT, also categorized as clinical stage 3B (Stage 3 due to S2 marker elevation). The standard treatment should be primary chemotherapy. The selection of chemotherapy regimen depends on the International Germ Cell Cancer Collaborative Group Risk Classification for Advanced Germ Cell Tumor (IGCCCG) that includes the location of primary tumor, presence of metastases, and tumor marker levels. The patient's AFP level remains elevated and he is considered intermediate risk based on S2 marker elevation (post-orchiectomy AFP over 1,000 IU/mL on cycle 1, day 1 of chemotherapy). Intermediate and high-risk patients should receive four cycles of BEP. Simply repeating his tumor markers is incorrect as it is unlikely markers will subsequently normalize given the S2 level at diagnosis and failure of AFP to decline appropriately (half-life 5-7 days). BEP chemotherapy for 3 cycles and EP chemotherapy for 4 cycles are management options for patients with S1 markers and good risk disease. Primary RPLND is not indicated for patients with elevated tumor markers.

64. A 45-year-old man has recurrent calculi and low Vitamin D levels. His current medications include Vitamin D 1000 IU/day and hydrochlorothiazide. Serum calcium is high. Serum parathyroid hormone and phosphorus are normal. Serum potassium is low. After supplementing dietary potassium, the next step is:
A. restrict dietary calcium.
B. decrease Vitamin D intake.
C. decrease thiazide dose.
D. add potassium citrate.
E. change hydrochlorothiazide to indapamide.
ANSWER=C
Thiazide-induced hypercalcemia is associated with a normal parathyroid hormone (PTH) and phosphorus level, low urinary calcium level, and low serum potassium. Vitamin D excess, sarcoidosis, silicosis, and tuberculosis are associated with a low PTH level and will not cause hypokalemia. The treatment is to reduce the thiazide dose, and not restrict dietary calcium intake or decrease his low dose Vitamin D supplement. Adding potassium citrate will not lower his serum calcium level and should be used when a patient has thiazide-induced hypocitraturia. Hydrochlorothiazide and indapamide function similarly in the

treatment of hypercalciuria; therefore, changing one for the other, without a reduction in dosing, will not necessarily improve thiazide-induced hypercalcemia.

65. A six-month-old boy has a nonpalpable left testis. The contralateral testis is descended and normal in size. The next step is:
A. inguinal scrotal ultrasound.
B. abdominal CT scan.
C. left scrotal exploration.
D. diagnostic laparoscopy.
E. hCG treatment.
ANSWER=D
he descended testis is not hypertrophied (>2 cm in length in a prepubertal boy), implying that the undescended testis is present and located in an abdominal position. None of the imaging studies would eliminate the need for diagnostic laparoscopy to exclude an intraabdominal testicle. Scrotal exploration would be a reasonable option only if the descended testis were hypertrophied, as approximately 90-95% of the cases will have documented gonadal vessels in the inguinal canal. However, it should be noted that hypertrophy of the contralateral testis, if present, is neither perfectly sensitive nor specific for the presence of vanishing testis. Therefore, surgical exploration is indicated in all children with a nonpalpable testis, regardless of the size of the contralateral testis. In 5% of cases with unilateral hypertrophy, the testicle will have torsed intra-abdominally, and laparoscopy or retroperitoneal dissection will be necessary to visualize the blind-ending vessels proximal to the internal ring. There is no role for hormonal therapy to induce testicular descent due to its low efficacy.

66. The most common pure stone composition in patients with gout treated with allopurinol is:
A. xanthine.
B. calcium oxalate monohydrate.
C. calcium oxalate dihydrate.
D. calcium phosphate.
E. uric acid.
ANSWER=B
The most common stone compositions in patients with gout are calcium oxalate monohydrate (45%) and uric acid (52%). It is important to note that one should not assume that a patient with gout has a uric acid stone and look for supportive evidence (urine pH, stone density on CT scan, radiolucency on KUB) prior to initiating alkalinization therapy. When treated with allopurinol, the risk of uric acid stones decreases to 30% and calcium oxalate monohydrate become the most common stone composition in patients with gout. Xanthine stones are possible when patients are being treated with allopurinol but would be much less common than calcium oxalate and uric acid stones. Calcium oxalate dihydrate stones are more commonly seen in patients with hypercalciuria and are not as common as calcium oxalate monohydrate in patients with gout. Calcium phosphate stones are not typical in patients treated for gout.

67. A 65-year-old man has been on GnRH therapy for a rising PSA after XRT for prostate cancer. The PSA has increased from 2.1 ng/mL to 3.6 ng/mL over the past three months. The testosterone level is < 50 ng/mL. Metastatic evaluation is negative. The next step is:
A. pembrolizumab.
B. abiraterone plus prednisone.
C. sipuleucel-T.
D. enzalutamide.
E. docetaxel.
ANSWER=D
This patient has non-metastatic castration-resistant prostate cancer (CRPC). The AUA CRPC Guidelines recommend enzalutamide, apalutamide, or darolutamide based on randomized trials showing improvement in metastasis-free survival (PROSPER, SPARTAN, ARAMIS). Future reports will assess overall survival. All trials included men with PSA doubling time (PSADT) less than ten months, but FDA approval is not restricted by PSADT. AUA and National Comprehensive Cancer Network (NCCN) Guidelines recommend treatment for men with PSADT less than ten months. Prior to these randomized trials, observation was recommended and is still an option, particularly for men with prolonged PSADT. Pembrolizumab is approved for men with mutations in mismatch repair genes (MMR) and/or exhibit microsatellite instability (MSI). Abiraterone and docetaxel are approved for use in newly diagnosed hormone-sensitive metastatic disease or metastatic castration-resistant prostate cancer. Sipuleucel-T is approved for asymptomatic or minimally symptomatic metastatic castration-resistant prostate cancer.

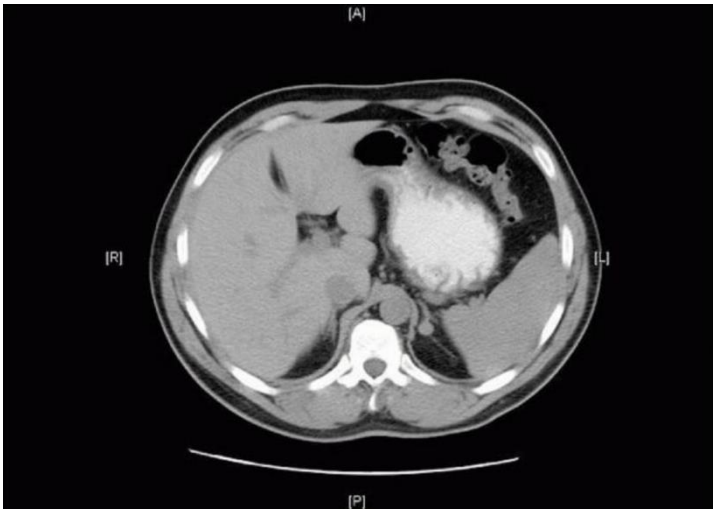
68. A 19-year-old man states that his partner has noticed significant left lateral deviation of his penis on erection. He denies any penile trauma and has not previously noticed the curvature. The most likely diagnosis is:
A. Peyronie's disease.
B. subacute penile fracture.
C. acquired penile curvature.
D. congenital penile curvature.
E. hypospadias with chordee.
ANSWER=D
his patient has congenital penile curvature which is often noticed in the postpubescent time period when the man becomes sexually active. Patients with congenital curvature of the penis can have ventral, lateral (most often to the left), or unusually, dorsal curvature. Photographs of the erect penis demonstrate a smooth curvature of the penile shaft. Patients usually are healthy young men classically presenting between the ages of 18 and 30 years old. Many of these patients have noticed curvature before passing through puberty but have presumed it to be normal. Evaluation is sought by the patient only when the abnormal curvature is brought to their attention by their sexual partner. There is usually no association with penile trauma which may lead to curvature from acute or subacute penile fracture and can cause acquired penile curvature. Peyronie's disease generally occurs in older men and is associated with pain on erection and gradual change in the degree of curvature. Another name for congenital penile curvature is chordee without hypospadias. Physical examination in these patients will not reveal a plaque, and unlike patients with Peyronie's disease, there is no indication for intralesional injections. Surgical repair, when necessary, is usually performed using a plication technique.

69. A 52-year-old man sustains an electrical burn to the penis while repairing a high voltage power line. Four hours after the injury, the penile shaft and glans are erythematous with superficial skin sloughing and blistering. The next step is:
A. observation.
B. retrograde urethrogram.
C. urethral catheter.
D. suprapubic cystostomy.
E. penile debridement.
ANSWER=D
The patient has suffered a significant burn to the penile shaft. Most genital burns are full thickness with significant tissue sloughing of the penis and urethra in the days following injury. Conservative management, including suprapubic tube placement in the bladder, should be maintained until the full extent of injury is known. Prolonged bladder drainage is often required in these patients due to the extent of their injury. Suprapubic cystostomy is preferred over urethral catheterization in order to avoid further urethral damage with catheterization, instrumentation, contrast studies, or endoscopy. Penile debridement is not indicated at this early stage of injury, and retrograde urethrogram will not provide useful information four hours after injury.

70. A 52-year-old woman has a 2.5 cm cystic right renal lesion on CT scan with Hounsfield units of 8. The lesion has smooth, thin walls, and a few thin, non-enhancing septa containing fine calcifications. The next step is:
A. no further surveillance.
B. ultrasound in six months.
C. CT scan in one year.
D. percutaneous biopsy.
E. partial nephrectomy.
ANSWER=A
Based on radiographic characteristics of smooth thin walls with thin, non-enhancing septa, the lesion would be characterized as a Bosniak II cyst, for which no intervention or additional follow-up is recommended. Indeed, given the benign nature of Bosniak II cysts, surveillance imaging is not recommended. Likewise, biopsy would not be indicated for a Bosniak II cyst and may be non-diagnostic in the setting of a cystic renal lesion without a solid component. Partial nephrectomy would also not be indicated here given the high likelihood of the lesion being benign. To outline several features of the Bosniak classifications of renal cysts, for which a recent update was proposed: (I) hairline thin (less than or equal to 2 mm) cyst wall, water density in Hounsfield units, no septa or calcifications; (Il) thin smooth walls; few thin septa +/- calcifications; homogeneous high-attenuation lesions; (IIF) minimally thickened cyst wall or smooth minimally thickened septa or many hairline thin septa; (Ill) thickened or irregular wall or septa, enhancing with contrast; (IV) enhancing soft-tissue (nodular) component.

71. A 56-year-old woman has urine leakage with cough and exercise for the last six months. She had a midurethral sling ten years ago. Examination reveals loss of urine with cough and minimal urethral hypermobility. Urinalysis is normal and PVR is 15 mL. The next step is:
A. urethral bulking agent.
B. transobturator midurethral sling.
C. retropubic midurethral sling.
D. retropubic bladder neck suspension.
E. artificial urinary sphincter.
ANSWER=C
A repeat midurethral sling is an appropriate option for a patient with recurrent stress urinary incontinence (SUI). Cure rates for patients with recurrent SUI after a midurethral sling procedure appear to be higher for the retropubic approach compared to the transobturator approach. Urethral bulking agents would be less likely to lead to a long-term resolution and are associated with lower rates of subjective improvement compared to a sling for recurrent SUI. Placement of an autologous fascial sling would also be a viable option for this patient. A retropubic bladder neck suspension is an inferior procedure compared to a retropubic midurethral or autologous sling. Placement of an artificial urinary sphincter would not be indicated for this patient.

72. A 26-year-old woman has a one-year history of weight gain, hypertension, and abdominal striations. CT scan is shown. The next step is:
A. 24-hour urinary 17-ketosteroids.
B. low dose dexamethasone suppression test.
C. MRI scan of the abdomen.
D. MRI scan of the brain.
E. biopsy.



ANSWER=B
The CT scan demonstrates a small left adrenal lesion. Weight gain, hypertension, and skin changes secondary to disturbed collagen synthesis are all hallmarks of Cushing's syndrome, but are not specific features of the diagnosis. Current guidelines for the evaluation of suspected Cushing's syndrome recommend an overnight low dose dexamethasone suppression test. Twenty four-hour urine for 17-ketosteroids is not recommended as a screen for Cushing's syndrome. MRI scan of the abdomen may demonstrate high signal intensity on T2 sequences in cases of pheochromocytoma and adrenocortical carcinoma but will not distinguish functional from non-functional adrenal masses and would not be indicated as the next step. An adrenal biopsy cannot differentiate adrenal adenomas from adrenal carcinomas and would not be indicated prior to obtaining a metabolic work up. MRI scan of the brain to assess for a pituitary adenoma would be appropriate after functional work-up indicated a probable diagnosis of ACTH-dependent Cushing's disease, but would not be used as a screening diagnostic procedure prior to establishing the presence of hypercortisolism.

73. Four weeks after SWL, the best treatment of a persistent, asymptomatic 2 cm steinstrasse is:
A. medical expulsive therapy.
B. ureteral stent.
C. SWL of the lead fragment.
D. ureteroscopic laser lithotripsy.
E. percutaneous antegrade ureteroscopy.
ANSWER=D
Patients with steinstrasse who are asymptomatic can often be observed initially, as spontaneous stone clearance can occur. Medical expulsive therapy with alpha-blockers may be used to augment expectant management and may aid in pain control. Failure of expectant management, though, is an indication for intervention. When intervention is required, a minimally invasive approach is often successful. Ureteroscopic intervention is definitive and predictable, with an immediate success rate approaching 100%. Additional SWL may be successful, but the results are less predictable than with ureteroscopy. A ureteral stent alone will help alleviate obstruction and will improve pain if the patient is symptomatic; however, success of a nephrostomy tube is likely greater than a stent alone when managing a steinstrasse. Percutaneous antegrade ureteroscopy may be used as a salvage procedure.

74. A 19-year-old man on amoxicillin for acute pharyngitis has a two-day history of painless gross hematuria. Temperature is 38.5° C and blood pressure is 150/80 mmHg. WBC is 16,000/cu mm and creatinine is 2.7 mg/dL. Urine dipstick shows 2+ protein and 4+ blood. Renal ultrasound is normal. Renal biopsy shows crescentic glomeruli and mesangial cell proliferation. He most likely has:
A. minimal change nephrotic syndrome.

B. membranous glomerulonephritis.
C. membranoproliferative glomerulonephritis.
D. post-infectious glomerulonephritis.
E. IgA nephropathy.
ANSWER=E
This presentation is consistent with IgA nephropathy (Berger's disease). It is more prevalent in the second decade of life and is more common in boys. It is often precipitated by upper respiratory infection such as pharyngitis. The clinical presentation is variable, ranging from asymptomatic microscopic hematuria, nephrotic syndrome and acute renal failure. Renal biopsy findings are classic for IgA nephropathy and immunofluorescent staining will show IgA deposits. Post-infectious glomerulonephritis (GN) occurs 7-21 days after group A beta hemolytic streptococcal infection and presents with cola-colored urine in well children without hypertension, edema, or proteinuria. Biopsy in post-infectious GN shows marked cellular proliferation in the glomeruli. Minimal change nephrotic syndrome (MCNS) is most common in childhood and presents with edema, nephrotic-range proteinuria, serum albumin < 2.5 g/dL, and elevated plasma cholesterol and/or triglycerides. Biopsy in MCNS shows normal renal tissue or mild focal increase in mesangial cellularity. Membranous GN occurs with gradual symptoms of proteinuria, hypertension, and hematuria (microscopic in 80%). Membranoproliferative GN is a chronic disease that presents with microscopic or gross hematuria and proteinuria, and is often picked up on screening urinalysis.

75. One week following colectomy, a 78-year-old man has a voiding trial. The antimicrobial of choice is:
A. no antibiotic is indicated.
B. amoxicillin.
C. cephalexin.
D. trimethoprim/sulfamethoxazole.
E. gentamicin.
ANSWER=D
Options for treatment of a patient at the time of removal of an external urinary catheter include empiric therapy or culture-directed antimicrobials. An analysis in the Cochrane Database of Systematic Reviews concluded that there is limited evidence indicating that receiving antimicrobials during the first three postoperative days, or from postoperative day two until catheter removal, reduces the rate of bacteriuria and other signs of infection in surgical patients with bladder drainage for at least 24 hours postoperatively. The AUA Best Practice Panel concluded that the benefits for antimicrobial prophylaxis at removal of an external urinary catheter most likely apply to patients with risk factors (i.e., advanced age, anatomic anomalies of the urinary tract, chronic steroid use, smoking, etc.). The antimicrobials of choice are fluoroquinolones or trimethoprim/sulfamethoxazole. Amoxicillin, cephalexin, or gentamicin are not antimicrobials of choice. Antimicrobials are indicated based on this patient's increase risk duo to advanced age.

76. A patient with recurrent calcium oxalate stones undergoes a 24-hour urine collection with the following results: calcium 180 mg (normal < 200 mg); oxalate 42 mg (normal < 40 mg); citrate 575 mg (normal > 550 mg); sodium 155 mg (normal < 150 mg); uric acid 900 mg (normal < 800 mg). The treatment most likely to reduce future stone formation is:
A. low oxalate diet.
B. low sodium diet.
C. allopurinol.
D. potassium citrate.
E. thiazide.
ANSWER=C
The AUA Medical Management of Kidney Stones Guideline states that clinicians should offer allopurinol to patients with recurrent calcium oxalate stones who have hyperuricosuria and normal urinary calcium. A prospective randomized controlled trial demonstrated that allopurinol reduced the risk of recurrent calcium oxalate stones in the setting of hyperuricosuria (urinary uric acid excretion > 800 mg/day) and normocalciuria. Whether the drug is effective in patients with hypercalciuria has not been established. Hyperuricemia is not a required criterion for allopurinol therapy. In addition to medication, specific recommendations about limiting non-dairy animal protein may maximize the efficacy of allopurinol. In the present scenario, the patient's hyperoxaluria is modest, so a low oxalate diet would not be expected to have a large effect on urinary oxalate. A low sodium diet for calcium oxalate stone formers is most effective in the setting of hypercalciuria. Potassium citrate is most effective in the setting of hypocitraturia. A thiazide is most effective for hypercalciuria.

77. A 55-year-old woman has just completed a course of trimethoprim/sulfamethoxazole. She develops fever, a dark red macular rash, mucosal erosions, and conjunctival lesions. The next step is:
A. local wound care.
B. topical corticosteroids.
C. antihistamines.
D. acyclovir.
E. vancomycin.
ANSWER=A
Stevens-Johnson syndrome, or toxic epidermal necrolysis, is a severe cutaneous drug reaction characterized by fever, influenza-type symptoms, a macular rash (sometimes with necrotic centers), conjunctival lesions, and mucosal erosions. The reaction typically begins one to three weeks after initiation of therapy. More than 100 compounds have been implicated, but the most common causes are antibiotics (particularly sulfa agents), anticonvulsants, allopurinol, and certain NSAIDs. Treatment includes withdrawal of responsible drugs, skin care (placement in a burn unit may be necessary in those with extensive skin involvement), fluid replacement, pain control, and nutritional support. There is no strong evidence to support any specific therapy (steroids, antihistamines, antimicrobials, or antivirals) beyond these supportive measures.

78. A 43-year-old man with a history of a penile fracture 12 months ago has curvature and penile pain during intercourse. On examination, he has a palpable, soft plaque and a 70-degree dorsal penile curvature with intracavernosal injection. The next step is:
A. observation.
B. extracorporeal shock wave therapy (ESWT).
C. intralesional verapamil injections.
D. intralesional collagenase injections.
E. stem cell therapy.
ANSWER=D
Clinicians may administer intralesional collagenase for the reduction of penile curvature in patients with stable Peyronie's disease with curvature between 30 and 90 degrees, intact erectile function, absence of hourglass deformity, calcified plaque, or plaque proximal to the penile base. Verapamil is currently used off-label and should not be considered first-line therapy. ESWT could potentially improve penile pain but will not address his penile curvature. Stem cell therapy is currently considered experimental and not appropriate therapy for this patient. Penile plication or grafting procedures could be considered after less invasive therapies have failed.

79. A 75-year-old man with stage 3 chronic kidney disease requires a transverse colon conduit. The most appropriate bowel preparation is:
A. magnesium sulfate.
B. polyethylene glycol.
C. sodium phosphate.
D. magnesium citrate.

E. magnesium citrate/sodium picosulfate.
ANSWER=B
In elderly patients or those with known renal insufficiency, the mechanical bowel preparation of choice is polyethylene glycol (PEG) because it is non-absorbable. The PEG-lavage solutions include GoLYTELY® or the more palatable NuLYTELY®. The other oral cathartic solutions (sodium phosphate and magnesium citrate) run the risk of absorption of phosphate or magnesium. Phosphate absorption in particular should be avoided in those with renal insufficiency as it can lead to further, sometimes irreversible, renal failure. Magnesium sulfate is typically used in combination with sodium sulfate and potassium sulfate as a laxative in preparation for colonoscopy. It is important to remember that for most urologic patients undergoing surgery that may incorporate small bowel, routine mechanical bowel preparation is likely unnecessary.

80. Women are most likely to have E. coli bacteriuria after intercourse when:
A. in mid-menstrual cycle.
B. using a spermicide.
C. in early menstrual cycle.
D. on an oral contraceptive.
E. their partner uses a condom.
ANSWER=B
Spermicide use is a risk factor for recurrent UTIs. The use of spermicidal jelly or foam markedly alters normal vaginal flora and strongly predisposes users to the development of vaginal colonization and bacteriuria with E. coli. The timing of the menstrual cycle, use of oral contraceptives, or the partner's use of a condom is not known to impact post-coital UTI.

81. A 75-year-old hospitalized man with squamous cell cancer of the lung is diagnosed with a 2 cm renal calculus. Laboratory evaluation demonstrates hypercalcemia and an E. coli UTI. The most likely cause of stone formation is:
A. absorptive hypercalciuria.
B. primary hyperparathyroidism.
C. secondary hyperparathyroidism.
D. ectopic hyperparathyroidism.
E. E. coli UTI.
ANSWER=D
Among the conditions listed, only the ectopic production of parathyroid hormone-related peptide would explain his stone formation. E. coli is not a urease producing organism and thus should not cause a stone. The presence of hypercalcemia rules out secondary hyperparathyroidism. While absorptive hypercalciuria may be playing a role in this patient, the increase in intestinal calcium absorption is due to the effect of ectopic production of parathyroid hormone-related peptide (homologous to parathyroid hormone in the first 13 amino acids) noted by the hypercalcemia present. This ectopic production is most commonly seen with malignancies of the breast and lung (as in this case). Malignancy is the primary cause of hypercalcemia in hospitalized patients; however, in an outpatient setting, hypercalcemia is most commonly caused by primary hyperparathyroidism.

82. A 62-year-old man has two right renal masses, measuring 2 cm and 3 cm, and extensive paraaortic and pelvic lymphadenopathy. Metastatic evaluation is otherwise negative. He has a radiographically normal contralateral kidney and a GFR of 58 mL/min/1.73 m2. The next step is:
A. percutaneous biopsy.
B. percutaneous ablation of renal masses
C. partial nephrectomy of renal masses.
D. radical nephrectomy and lymph node dissection.
E. ipilimumab and nivolumab.
ANSWER=A
The clinical situation involves lymphadenopathy out of proportion to the renal mass size, as well as lymphadenopathy outside of what would be RCC primary landing zones. The typical lymphatic drainage of the right kidney includes the hilar, paracaval, and interaortocaval areas, while the typical drainage of the left kidney includes the hilar, para-aortic, and pre-aortic areas. The constellation of findings herein should thereby prompt consideration for renal lymphoma. Renal involvement from lymphoma is not uncommon, and radiographic characteristics may include the presence of multiple renal masses. As such, percutaneous biopsy would be the recommended next step. If lymphoma were diagnosed, systemic chemotherapy, with or without XRT, would be indicated rather than localized treatments such as percutaneous ablation or surgical extirpation with either partial or radical nephrectomy. In fact, AUA Guidelines state "Renal mass biopsy should be considered when a mass is suspected to be hematologic, metastatic, inflammatory, or infectious." Biopsy is moreover recommended prior to ablation regardless of whether lymphoma is being considered in the differential diagnosis. The combination of ipilimumab and nivolumab represents a treatment option for patients with known metastatic RCC but would not be indicated without a histologic diagnosis.

83. After XRT for prostate cancer and a channel TURP, a 74-year-old man has urinary incontinence. Urinalysis is normal, voided volume is 200 mL, and PVR is 40 mL. His urodynamic study is shown. The next step is:
A. tamsulosin.
B. solifenacin.
C. onabotulinumtoxinA injection.
D. male sling.
E. artificial sphincter.

ANSWER=B
This urodynamics shows detrusor overactivity (DO) and no evidence of stress incontinence. Therapies should be geared accordingly for urgency urinary incontinence (UUI). Though behavioral modification and pelvic floor training are recommended for first line therapy for UUI, given the frequent episodes of DO at low volumes, an antimuscarinic (or beta agonist), such as solifenacin, may provide more immediate improvement. Botulinum toxin injection could be considered for refractory symptoms as third line therapy. A sling and an artificial urinary sphincter would not be considered as these therapies are meant to address stress urinary incontinence. Tamsulosin is used for obstructive LUTS.

84. Congenital paraureteral diverticula are most frequently:
A. associated with VUR.
B. associated with bladder outlet obstruction.
C. located on the posterior bladder floor.
D. seen in females.
E. detected by cystoscopy.
ANSWER=A

Congenital diverticula usually occur in a smooth-walled, unobstructed bladder and are most often solitary and occur without evidence of outflow obstruction. The cause of these diverticula is an inherent weakness in the bladder musculature rather than an association with infravesical obstruction. Most congenital diverticula start lateral to the ureteral orifice with herniation of bladder mucosa through the ureteral hiatus between the intravesical ureter and the roof of the ureteral hiatus. As the diverticulum enlarges, it may incorporate the ureteral tunnel and the ureter may drain into the diverticulum with resulting reflux. Congenital diverticula are more commonly seen in boys; girls show spontaneous resolution of their diverticula in association with VUR more frequently. The gold standard for detecting diverticula remains VCUG.

85. A patient undergoing robotic pelvic surgery in Trendelenburg position with an intraperitoneal pressure of 15 mmHg would be expected to have:
A. increased heart rate.
B. decreased mean arterial pressure.
C. increased systemic vascular resistance.
D. decreased cardiac output.
E. increased blood CO2 levels.
ANSWER=E
In the supine position, cardiac output remains unchanged or decreases when intraabdominal pressures are < 15 mmHg, while mean arterial pressure and systemic vascular resistance increase. If pneumoperitoneum pressures are increased above 20 mmHg, cardiac output is reduced due to decreasing venous return. In Trendelenburg position, the heart rate drops, mean arterial pressure rises, systemic vascular resistance falls, and cardiac output increases. Therefore, Trendelenburg is favorable for laparoscopy due to higher cardiac output caused by increased venous return. However, this beneficial effect is completely negated if the pneumoperitoneum pressure is increased to 30-40 mmHg. Within a pressure range of 5 to 20 mmHg, there is a stimulatory effect of the hypercarbia on the cardiovascular system resulting in decreased peripheral vascular resistance, increased heart rate, and enhanced contractility of the myocardium. At insufflation pressures above 10 mmHg and higher, the partial pressure of CO2 (i.e., CO2 levels within the arterial or venous blood) increases. At 5 mmHg insufflation, it does not increase significantly.

86. Duplex ultrasonography is:
A. dual energy gray-scale ultrasound.
B. bi-directional Doppler ultrasound.
C. color flow and power Doppler ultrasound.
D. gray-scale and Doppler ultrasound.
E. gray-scale and microbubble contrast ultrasound.
ANSWER=D
Duplex ultrasonography is a combination of gray-scale ultrasound, that allows for distinguishing architectural features, and Doppler ultrasound, that allows for distinguishing flow. The Doppler flow image is often projected on to the gray-scale image using color (color flow). By convention, red is flow towards the transducer and blue is flow away from the transducer. Thus, color Doppler shows bidirectional flow. Power Doppler is a more sensitive way to measure flow but does not provide information about the direction of flow. Microbubble contrast agents can be used to enhance detection of flow using ultrasound. Dual energy does not refer to ultrasound imaging and typically refers to CT scan. Dual energy CT uses both the normal x-ray and also a second less powerful x-ray to make the images.

87. A 43-year-old man with azoospermia had testicular biopsies that revealed Sertoli cell-only histology. He and his partner prefer to have a biological child. His serum hormone testing is normal except for an elevated FSH level. He has a 46, XY karyotype and no Y chromosome microdeletions. The next step is:
A. human chorionic gonadotropin (hCG).
B. clomiphene citrate.
C. microdissection testicular sperm extraction (micro-TESE).
D. percutaneous epididymal sperm aspiration (PESA).
E. adoption.
ANSWER=C
Despite the fact that this patient has Sertoli cell-only syndrome on the prior testicular biopsy, he still has an approximately 30% chance of having sperm retrieved during a microdissection testicular sperm extraction procedure. Human chorionic gonadotropin and clomiphene citrate therapy are not indicated given that his serum testosterone level is normal. While adoption is an option, this couple prefers to use the male partner's sperm. Percutaneous epididymal sperm aspiration is used to retrieve sperm from males with obstructive azoospermia and would not be appropriate for this patient with nonobstructive azoospermia.

88. Compared to the transperitoneal approach, the extraperitoneal approach to robotic assisted radical prostatectomy is associated with:
A. increased blood loss.
B. decreased tension on the anastomosis.
C. increased risk of bladder injury.
D. increased absorption of CO2.
E. need for steeper Trendelenburg positioning.
ANSWER=D
There is no difference in blood loss and the risk of bladder injury does not differ by approach to robotic-assisted radical prostatectomy. Because the bladder is not released completely with the extraperitoneal approach, there is more tension during the anastomosis. This is overcome by reducing the insufflation pressure during this step or by using barbed sutures. The urachus and medial umbilical ligaments are not divided during the extraperitoneal approach to robotic assisted radical prostatectomy. This results in a smaller working space and the cephalad attachments of the bladder results in more tension during the anastomosis. However, bowel contents are not encountered, which is advantageous in patients with a prior laparotomy. The absence of bowel contents coming into the pelvis also lessens the need for steep Trendelenburg during the procedure. Additionally, this prevents urinary ascites with anastomotic urine leaks. Finally, several studies have demonstrated higher CO2 absorption with extraperitoneal versus transperitoneal robotic-assisted radical prostatectomy.

89. A four-month-old boy has a history of prenatal bilateral hydronephrosis. Postnatal ultrasound reveals severe left hydroureteronephrosis. VCUG is normal. A diuretic renal scan shows normal symmetric uptake bilaterally; T1/2 of the right kidney is 8 min; T1/2 of the left kidney is 28 min. The next steps are prophylactic antibiotics and:
A. renal ultrasound in three months.
B. MRI urogram.
C. cystoscopy and distal ureteral dilation.
D. cutaneous ureterostomy.
E. ureteral reimplantation.
ANSWER=A
The patient has a primary obstructive megaureter. The majority of non-refluxing megaureters run a benign course and resolve spontaneously within the first few years of life. Surgery is to be considered for this condition when patients are symptomatic or have recurring UTIs, progressive unremitting dilation on ultrasound, differential renal function < 40%, and/or significant decreases in differential renal function of 5% or greater on sequential renal nuclear function studies. Since this patient has equal function on renal scan and is asymptomatic, no surgical intervention is warranted at this time. Observation with a renal ultrasound in three months is reasonable to assess changes in the

degree of dilation. If it appears to be getting worse, then a repeat renal scan could be obtained to assess any change in function which would also indicate the need for surgical intervention. An MRI urogram at this age would require anesthesia and is unnecessarily invasive and expensive. Ureteral dilation, ureterostomy, or reimplantation are treatment options if intervention is indicated for the development of symptoms or loss of renal function.

90. During spinal shock, the status of the smooth sphincter, striated sphincter, and guarding reflex, respectively, is:
A. synergic, synergic, present.
B. synergic, synergic, absent.
C. synergic, dyssynergic, present.
D. synergic, dyssynergic, absent.
E. dyssynergic, synergic, present.
ANSWER=B
A period of "spinal shock" may be expected after a significant spinal cord injury. Both autonomic and somatic activity is suppressed, and the bladder is acontractile and areflexic. Unless the patient has undergone prior surgery or sustained a sympathetic injury (thoracolumbar), the bladder neck is usually closed and competent. Hence, the smooth sphincter mechanism appears to be functional and synergic. The external sphincter is likewise synergic, and some EMG activity may be recorded from this location. However, the striated sphincter response during filling (i.e., normal guarding reflex) is absent and there is loss of voluntary sphincter control. Unless there is significant bladder over distention with overflow incontinence, the patient typically remains continent due to the maintenance of some existing sphincter tone.

91. A ten-year-old boy with intermittent left lower quadrant pain has a pelvic kidney with a radiopaque 1.6 cm calculus in the extrarenal pelvis. The next step is:
A. alkalinization of urine.
B. SWL.
C. ureteroscopy and laser lithotripsy.
D. PCNL.
E. laparoscopic pyelolithotomy.
ANSWER=E
Although all modalities can be used effectively to manage urolithiasis, laparoscopic pyelolithotomy has the best clearance rate for this scenario. For large stone volume in a pelvic kidney, clearance rate would be low for ureteroscopy or SWL compared to PCNL or pyelolithotomy due to the non-dependent position of the renal pelvis. For a pelvic kidney, percutaneous access would be more difficult and carries a higher risk of vascular injury to either the iliac or anomalous renal vessels. The dilated renal pelvis should be amenable to incision with extraction of this stone. In that the stone is radiopaque, alkalinization therapy is not indicated, as the stone is unlikely to be uric acid.

92. One year after a negative hematuria evaluation, a 36-year-old woman has 2 RBC/hpf on microscopic urinalysis. The next step is:
A. no further testing.
B. urine cytology.
C. cystoscopy.
D. renal ultrasound and cystoscopy.
E. renal ultrasound, cystoscopy, and urine cytology.
ANSWER=A
The AUA/SUFU Guideline for asymptomatic microhematuria was updated in 2020. This patient (low-risk) had a negative evaluation one year prior, and now has a negative urinalysis for microhematuria (defined as three or more RBC/hpf), which is reasonable and consistent with guideline statement 19, which states, "In patients with a negative hematuria evaluation, clinicians may obtain a repeat urinalysis within 12 months," (Conditional Recommendation; Evidence Level: Grade C). Given this, the patient does not require further evaluation based on statement 20, which states, "For patients with a prior negative hematuria evaluation and subsequent negative urinalysis, clinicians may discontinue further evaluation for microhematuria," (Conditional Recommendation; Evidence Level: Grade C). Further and repeated evaluation of any sort is not supported given the very low risk of malignancy, especially in this low-risk patient.

93. A 70-year-old man is being considered for hyperbaric oxygen therapy for radiation cystitis. A relative contraindication to this therapy is:
A. protein C deficiency.
B. dementia.
C. seizure disorder.
D. glaucoma.
E. pulmonary hypertension.
ANSWER=C
Patients with a history of a seizure disorder are at risk for complications related to central nervous system (CNS) toxicity from high oxygen concentrations during hyperbaric oxygen therapy (HBOT). HBOT has no known impact on clotting disorders, cognitive function, ocular pressures, or pulmonary arterial pressures.

94. A 68-year-old diabetic man has nocturia. DRE reveals a benign 40-gram prostate, urinalysis is unremarkable, and PVR is 55 mL. He completes a 24-hour frequency-volume chart as shown. The next step is:
A. decrease nightly fluid intake.
B. decrease caffeine consumption.
C. tamsulosin.
D. oxybutynin.
E. sleep study.
ANSWER=E
This patient has nocturia (awakens two times to void). The cause of his nocturia is nocturnal polyuria (NP) as his nocturnal volume is > 20-33% of his total 24-hour urine production. His total 24-hour urine (from 7:00 am to 7:00 am) production is normal (2,400 mL). The nocturnal volume voided is 900 mL, this is 37.5% of his total 24-hour urine production. It is important to know that the first morning void is included in the nocturnal volume voided since that urine is made overnight. Common underlying causes of NP include excessive night time fluid intake, peripheral edema, obstructive sleep apnea (OSA), diabetes mellitus, and congestive heart failure. Behavioral modifications are appropriate, but in this patient, decreasing fluids prior to bedtime is incorrect because he does not consume fluids four hours prior to bedtime. Decreasing caffeine consumption is incorrect as well because he consumes minimal caffeine, and only in the morning. Even though he has an enlarged prostate, his PVR is negligible and he does not have obstructive symptoms; therefore, tamsulosin would be unlikely to impact his nocturnal frequency. Oxybutynin would not be indicated as he does not have symptoms of OAB such as urinary frequency or urgency. In this patient, suggesting that his primary care physician order a sleep study would be the next step as it could uncover OSA as a potential cause of his nocturnal polyuria. In addition, treatment of OSA with continuous positive airway pressure (CPAP) often results in an improvement in his NP and a decrease in nocturnal voids. Another option to treat NP would be desmopressin which also requires monitoring of serum sodium as hyponatremia is a risk of this medication.

95. A 53-year-old man completes induction and the first maintenance course of intravesical BCG for cT1 urothelial bladder carcinoma with CIS. Bladder biopsies two months after his last BCG course reveal CIS. CT scan is normal. The next step is:
A. repeat induction with BCG and interferon.
B. bladder biopsies after next maintenance series.

C. chemoradiation.
D. radical cystectomy.
E. neoadjuvant chemotherapy and cystectomy.
ANSWER=D
This patient has had adequate intravesical therapy for his high risk, non-muscle invasive bladder cancer, defined as induction and at least one course of maintenance BCG, and thus would now be categorized as BCG unresponsive. Given the persistent CIS at this time (within 12 months), which is biopsy-proven, additional salvage intravesical therapies (whether BCG + Interferon or chemotherapy) are not indicated unless the patient is unwilling or unfit for cystectomy. Although bladder preservation with trimodal therapy (i.e., chemotherapy and XRT) can be considered in well-selected patients, it is not appropriate with the finding of CIS alone. Similarly, neoadjuvant chemotherapy has no proven benefit in patients undergoing cystectomy without muscle-invasive bladder cancer.

96. A 36-year-old woman with poorly controlled hypertension has high serum aldosterone levels despite a sodium load. CT scan demonstrated multifocal bilateral 5 mm adrenal nodules. The next step is:
A. MRI scan.
B. adrenal vein sampling.
C. spironolactone.
D. metyrapone.
E. bilateral adrenalectomy.
ANSWER=B
This patient has hyperaldosteronemia confirmed by a sodium loading test. If a CT scan fails to show a unilateral adrenal nodule over 1 cm in size in this setting, the next step is adrenal venous sampling to determine if there is lateralization of aldosterone secretion to one side. If lateralization is found, then surgery in the form of unilateral adrenalectomy should be considered (assuming the patient is a surgical candidate). In a young patient, as in this scenario, surgical resection would be indicated if lateralization is identified. On the other hand, if the patient is not a surgical candidate or there is no lateralization on adrenal venous sampling, then medical therapy such as with spironolactone is indicated for management. Bilateral adrenalectomy is not recommended as a treatment for hyperaldosteronemia, even in the absence of lateralization on adrenal venous sampling. Patients such as this should be treated with medical therapy. MRI scan offers no advantage over CT scans in evaluating for an aldosterone secreting adrenal tumor and would not be indicated. Metyrapone is used in the medical management of Cushing's syndrome but not hyperaldosteronemia.

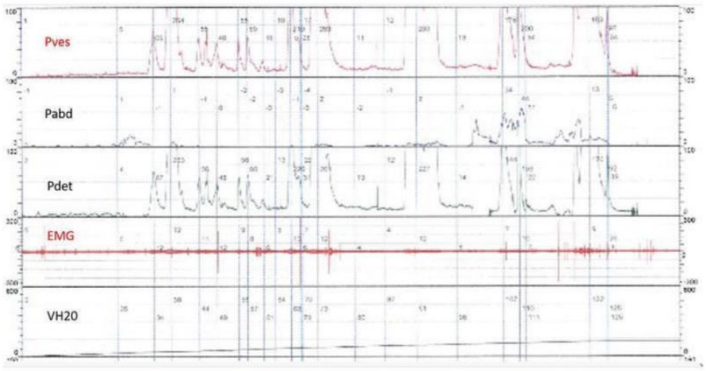
97. A 20-year-old man has a gunshot wound in the suprapubic area. He is hemodynamically stable and has gross hematuria. An arterial phase CT scan shows heterogeneous fluid in the pelvis. CT cystogram reveals extraperitoneal contrast extravasation. The next step is:
A. continue urethral catheterization with cystogram in seven days.
B. CT urogram in 48 hours.
C. suprapubic tube placement.
D. cystoscopy and retrograde pyelograms.
E. exploratory laparotomy and cystorrhaphy.
ANSWER=E
Gunshot wounds of the bladder should be explored and repaired, even if extraperitoneal. This is in contrast to blunt injury of the bladder that can be observed if extraperitoneal. Complex extraperitoneal injuries should be repaired immediately in the following scenarios: the presence of bone fragments in the bladder, severe gross hematuria, rectal or vaginal injuries, and bladder neck injuries. Similarly, if the patient is going for other open abdominal or pelvic surgery, an extraperitoneal bladder rupture should be repaired at the same time. Follow-up CT scan may or may not be indicated depending on what is found at the exploration. Isolated suprapubic tube placement is not indicated as it does not address the bladder injury. Retrograde pyelograms may be performed at the time of the exploratory laparotomy; however, doing this cystoscopically in the presence of a gunshot wound injury of the bladder would be (*Incomplete explanation from the source*).

98. Peyronie's disease is characterized by:
A. spontaneous resolution of curvature in the majority of patients within one year.
B. spontaneous resolution of pain in the majority of patients within one year.
C. gradually worsening LUTS during the inflammatory phase.
D. spontaneous resolution of associated Dupuytren's contracture.
E. resolution of hourglass deformity in nearly all patients within one year.
ANSWER=B
Peyronie's disease (PD) is characterized by symptoms with a variable course, some of which may improve or resolve without treatment in some patients. In one study of 246 men newly diagnosed with PD who had no medical treatment and were followed for at least 12 months, all patients who had reported pain at baseline indicated improvement in pain, and most (89%) reported complete resolution of pain. Among men with curvature, 12% had improvement, 40% remained stable, and 48% had worsened curvature. These data suggest that for many or most patients' pain will resolve over time without intervention. Curvature (or other types of deformity including hourglass) is much less likely to improve. LUTS are not typically associated with PD. Only a minority of patients with PD will have concurrent Dupuytren's disease with hand contractures. There is no evidence that the Dupuytren's contracture will spontaneously resolve during the stable phase of the disease.

99. A 61-year-old woman comes to the emergency room with right lower abdominal pain and vomiting. She denies fever. Her pain and vomiting are controlled with medications. CT scan shows right hydroureteronephrosis with perinephric fluid secondary to a 3 mm right distal ureteral stone. The next step is:
A. observation.
B. tamsulosin.
C. diclofenac.
D. prednisone.
E. nifedipine.
ANSWER=A
The AUA Guidelines have recommended that patients with uncomplicated ureteral stones < 10 mm should be offered observation and patients with distal ureteral stones can be offered medical expulsion therapy with tamsulosin. However, two recent large randomized, controlled studies have shown the benefit of alpha-blockers to increase rate of stone expulsion is for larger stones (> 5 mm in size). Therefore, observation alone is the best next option for this patient, since medical expulsive therapy (tamsulosin or nifedipine) appears to have limited success in increasing stone passage rate in stones of this size. While tamsulosin may reduce pain while passing a kidney stone, it has not been shown to increase expulsion rate for small ureteral stones (< 4 mm). Steroid and NSAID therapy have not been shown to independently increase rate of stone expulsion. There is no indication for urgent intervention in this patient since her pain and vomiting have been controlled, and she does not have a fever.

100. A 12-year-old ambulatory boy with a history of imperforate anus repair has significant urinary incontinence despite maximal anticholinergics and onabotulinumtoxinA injection. He performs CIC every two to three hours during the day. Urodynamics is shown. End filling maximum bladder capacity is 150 mL and Valsalva LPP is 70 cm H2O. The next step is:
A. CIC.

B. onabotulinumtoxinA injection to urethral sphincter.
C. overnight bladder drainage.
D. bladder neck reconstruction.
E. augmentation cystoplasty.



ANSWER=E
This boy has disabling urinary incontinence and has failed anticholinergic treatment as well as previous onabotulinumtoxinA injections. The urodynamics shows severe detrusor overactivity, low bladder capacity, and LPP that should be adequate for urinary continence once the detrusor overactivity is corrected. OnabotulinumtoxinA to the external sphincter is likely to worsen, rather than improve incontinence in this situation, and there is no evidence of sphincter dyssynergy in the urodynamics tracing. Overnight bladder drainage is an option, but not preferred in a 12-year-old child who is ambulatory and will not address the daytime incontinence. Bladder neck reconstruction is not required since the Valsalva LPP is high enough to be consistent with continence once the bladder capacity is increased. Augmentation cystoplasty is the best option in this case to relieve the severe overactivity and reduced bladder capacity, and the 12-year-old age range improves the likelihood of compliance with care of the augmented bladder.

101. A 16-year-old boy undergoes left radical orchiectomy for a 12 cm paratesticular embryonal rhabdomyosarcoma with negative margins. CT scans are negative. The next step is:
A. surveillance.
B. XRT.
C. vincristine and actinomycin.
D. vincristine, actinomycin, and cyclophosphamide.
E. RPLND.
ANSWER=E
Paratesticular rhabdomyosarcoma (RMS), which comprise up to 10% of genitourinary RMS, arise from the testicular tunicae, epididymis, or spermatic cord. Embryonal subtype is the most common, representing > 90% of cases. Current recommendations are for patients greater than ten years old with paratesticular RMS to undergo ipsilateral staging RPLND, even with negative imaging studies, as these patients have been found to be more likely to harbor retroperitoneal disease. While additional chemotherapy or XRT may be required, RPLND should be the next step in treatment for the patient.

102. During robotic-assisted radical prostatectomy, the posterior urethra tears during the running anastomosis. During a second anastomotic attempt, the tissue continues to tear resulting in a 2 cm gap. The next step is:
A. decrease insufflation pressure.
B. perform anterior portion of the anastomosis first.
C. place Lembert sutures posterior and lateral to the bladder neck.
D. ligate and divide bladder pedicle on one side.
E. suture rhabdosphincter to Denonvilliers' fascia and posterior detrusor muscle.
ANSWER=E
Decreasing pneumo-insufflation to 7-10 mmHg decreases the space and brings the bladder caudad. However, this is something to be considered as an initial step and would not be helpful at this stage of surgery, after the tissues have already been damaged. Similarly, flattening the operating room table may result in the need for minimal bladder mobilization; however, this requires undocking the robot and has the trade-off of sacrificing exposure and is unlikely to succeed after two failed attempts. Lembert sutures are placed with intussusception of the bladder neck, which Walsh originally described to improve short-term urinary incontinence. However, that would not be helpful in this scenario as Lembert sutures actually decrease the caudad descent of the bladder to the urethral stump and cause an increase in the amount of tension during the anastomosis. Unilateral division of the bladder pedicle is performed during psoas hitch and not performed during robotic-assisted radical prostatectomy. Such posterior dissection may increase the risk of urinary retention, decrease blood supply for healing of the anastomosis and would not increase mobility to resolve this challenge. The Rocco stitch utilizes an absorbable suture to reapproximate Denonvillier's fascia and the posterior detrusor muscle to the posterior rhabdosphincter before performing the anastomosis. This serves to reduce tension at the vesicourethral anastomosis. Although there are some reports that a Rocco suture improves early recovery of urinary control, a randomized trial by Menon et al demonstrated no difference in regards to continence but did reveal less extravasation on cystography at catheter removal. Regardless, this maneuver decreases the distance for the anastomosis and reduces the tension for a vesical-urethral anastomosis, which is critical given the tissue trauma from the failed attempts in this patient.

103. The finding on prenatal imaging most consistent with bladder exstrophy is:
A. an exposed bladder plate with pubic diastasis.
B. a small phallus with dorsal chordee.
C. inability to visualize the bladder.
D. a large abdominal wall defect with exposed intestines.
E. polyhydramnios.
ANSWER=C
The inability to identify the fluid in the bladder on repeat studies, despite waiting for the bladder to fill, is the finding most consistent with bladder exstrophy on prenatal imaging. The exposed bladder plate with pubic diastasis is extremely difficult to visualize and confirm on prenatal screening. While the small phallus with dorsal chordee may be seen, this can be due to multiple other anomalies, including epispadias without exstrophy, micropenis and certain disorders of sex development, and is not indicative alone of bladder exstrophy. A larger abdominal wall defect with exposed intestines is associated with cloacal exstrophy or omphalocele, not bladder exstrophy. Finally, polyhydramnios is not seen in classic bladder exstrophy, despite the lack of a bladder containing urine, since the urine production is normal, and self-regulated through absorption of the amniotic wall surface.

104. A 65-year-old woman undergoes cytoreductive nephrectomy for clear cell RCC. Her Karnofsky performance status is 75 with hemoglobin 10 g/dL and platelets 450,000/cu mm. Tumor PDL-1 (Program Death Ligand-1) expression was < 1%. The next step is:
A. sunitinib.
B. pazopanib.
C. everolimus.
D. nivolumab.
E. nivolumab and ipilimumab.
ANSWER=E
This patient has International Metastatic RCC Database Consortium (IMDC) poor-risk RCC (4 risk factors). IMDC score is generated with 1 point for each of the following: < 1 year from diagnosis to systemic therapy, Karnofsky performance status (KPS) < 80%, hemoglobin < 12 g/dL, elevated corrected calcium, elevated neutrophils, and elevated platelets. Low-risk is 0 points, intermediate-risk 1-2 points, and poor-risk 3-6 points. Results

from the Checkmate 214 trial demonstrated the superiority of nivolumab and ipilimumab when compared to sunitinib in those patients with previously untreated intermediate- and poor-risk clear cell RCC. Despite the lower staining for PDL-1, even in this cohort, there was a benefit of nivolumab and ipilimumab over sunitinib. Other preferred first-line options based on NCCN guidelines for newly diagnosed intermediate or poor-risk metastatic clear cell RCC are axitinib/pembrolizumab or cabozantinib. Pazopanib, nivolumab monotherapy, and everolimus are second-line options for metastatic RCC.

105. Intravenous methylene blue should be avoided in patients taking:
A. nitrates.
B. cyanocobalamin.
C. serotonin uptake inhibitors.
D. indomethacin.
E. sulfamethoxazole.
ANSWER=C
Methylene blue is a potent monoamine oxidase inhibitor that has resulted in fatalities from serotonin toxicity when taken with tricyclic antidepressants or serotonin reuptake inhibitors (selective and nonselective), such as paroxetine. Serotonin toxicity manifests as spontaneous clonus, tremor, hyperreflexia, agitation, diaphoresis and/or fever. There is no reactivity in patients taking nitrates, cyanocobalamin, indomethacin, or sulfa antibiotics.

106. A ten-year-old boy falls from a second story balcony. His lowest blood pressure was 100/60 mmHg in the field. Spine films and KUB are normal. Urinalysis reveals 50 RBC/hpf without gross hematuria. The next step is:
A. serial physical examination.
B. repeat urinalysis.
C. MRI urogram.
D. tri-phasic CT scan.
E. retrograde urethrogram.
ANSWER=D
Mechanism of injury or associated organ injury dictate renal evaluation for a pediatric patient regardless of the absence of shock. Pediatric patients can maintain vascular tone in the presence of a significant injury. Serial examination and repeat urinalysis are not sufficient. Radiographic imaging is required and should consist of a CT scan to evaluate for renal injury and associated organ injury. In the absence of a pelvic fracture or gross hematuria, there is no role for retrograde urethrogram. In the setting of an acute trauma, MRI scan would not be expeditious during a trauma protocol and also is complicated by motion artifact.

107. Indocyanine green administration should be avoided in patients who are allergic to:
A. aspirin.
B. cyanocobalamin.
C. indomethacin.
D. iodine.
E. sulfamethoxazole.
ANSWER=D
Indocyanine green (ICG) is used to evaluate tissue perfusion in ophthalmology, dermatology and cardiology. In urology, it has been adapted as an adjunct in robotic partial nephrectomy to detect vascular perfusion and distinguish tumor from normal parenchyma. ICG is a fluorescent molecule that, when activated by incident infrared light at 780 nm, emits detectable light at 820-830 nm. When given as an intravenous bolus, it is rapidly bound to plasma proteins and is distributed in the blood stream, allowing assessment of tissue perfusion. In the kidney, ICG binds to the transporter bilitranslocase so healthy renal parenchyma appears isofluorescent. Renal tumors are typically deficient in bilitranslocase so appear hypofluorescent. ICG has a favorable safety profile with an adverse event rate of < 0.34%. ICG contains a small amount of sodium iodide to improve solubility in water for I.V. administration, and thus should not be given to people who are hypersensitive or allergic to iodine as anaphylaxis or other allergic reactions may occur. There is no known cross reactivity to aspirin, cyanocobalamin, indomethacin or sulfamethoxazole.

108. A 63-year-old man with a PSA of 1.4 ng/mL has obstructive LUTS despite six months of therapy with tamsulosin. His AUA Symptom Score is 22 and QOL score is 4. He has a 30-gram benign prostate on DRE and urinalysis is negative. PVR is 75 mL. The next step is:
A. cystoscopy.
B. finasteride.
C. pressure flow study.
D. prostatic urethral lift (UroLift®).
E. TURP.
ANSWER=A
Prior to a discussion of surgical options, the AUA Surgical Management of BPH Guideline recommends a focused history, physical examination, urinalysis, assessment of LUTS, and discussion of the patient's severity and bother (i.e., AUA Symptom Score). Other preoperative testing includes PVR and an assessment of prostate size and shape (i.e., TRUS or cystoscopy). Uroflowmetry is an additional option to be used as needed. Pressure flow studies should be considered in the evaluation of male LUTS when diagnostic uncertainty exists. After prostate size and configuration (such as the presence of a median lobe) is determined, surgical options such as prostatic urethral lift (UroLift®) or TURP may be discussed and offered. Finasteride would not be an appropriate treatment option for a small 30-gram prostate.

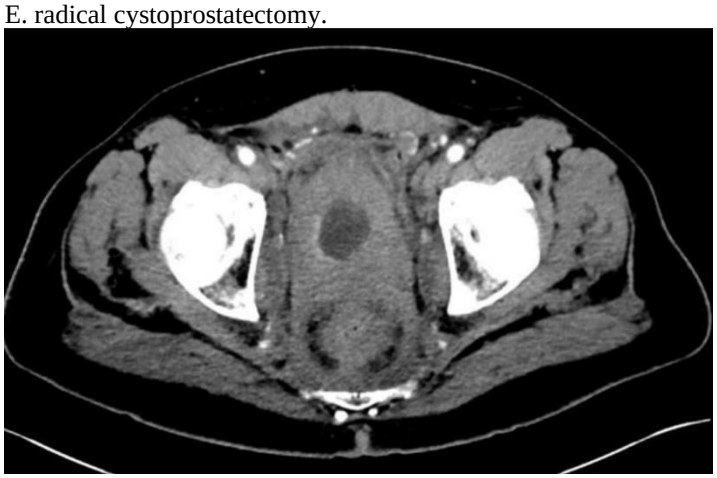
109. A 55-year-old man develops an arrhythmia while undergoing SWL for an obstructing 9 mm proximal ureteral stone. The next step is:
A. continue SWL.
B. stop SWL and resume when arrhythmia resolves.
C. change to gated SWL.
D. stop SWL and place a ureteral stent.
E. convert to ureteroscopy with laser lithotripsy.
ANSWER=B
Arrhythmia may be precipitated by SWL shocks. The majority of time these arrhythmias will resolve with a pause of SWL and the procedure can be resumed. Arrhythmias occur more often in patients undergoing ungated procedures and, if they persist or frequently recur, may require conversion to gating (shock delivery synchronized to patient electrocardiogram R wave) during the procedure. The reported rate of arrhythmia is approximately 8-21%. There has been no definitive correlation established regarding arrhythmia occurrence and age or gender of the patient, presence of heart disease, size or location of the stone, presence of ureteral catheter or nephrostomy tube, number or strength of the shockwaves, or the anesthetic agent delivered. Placing a ureteral stent will not decrease the risk of arrhythmia. Arrhythmia does not require conversion to ureteroscopic intervention unless it persists despite manoeuvres to reduce its risk of occurring.

110. A 22-year-old woman with a BMI of 39 kg/m? has a blood pressure of 145/80 mmHg despite use of an ACE inhibitor and furosemide. Her estimated GFR is 35 mL/min/1.73m2. She does not have a family history of hypertension. The next step is:
A. renal scintigraphy.
B. duplex Doppler ultrasonography.
C. CT angiography.
D. magnetic resonance angiography.
E. angiography.
ANSWER=D

Given the early onset of hypertension with a negative family history, as well as the use of more than one anti-hypertensive medication for moderate blood pressure control, this patient should be screened for renal artery stenosis. Plasma renin activity and renal scintigraphy are not recommended as screening tests for renal artery stenosis because of the lower sensitivity and specificity relative to newer imaging tests, such as duplex Doppler ultrasonography, CT angiography, and magnetic resonance angiography. However, it is difficult to visualize renal arteries and/or intra-arterial lesions with duplex Doppler ultrasonography in obese patients. Moreover, duplex Doppler ultrasonography is operator dependent, time-consuming, and technically difficult to perform. CT angiography has high sensitivity and specificity for detecting renovascular lesions; however, its use is limited in renal insufficiency due to the risk of contrast-induced nephrotoxicity. Magnetic resonance angiography is a sensitive and specific non-invasive screening test for renal artery stenosis that provides good visualization of renovascular lesions and provides a functional assessment as both GFR and renal blood flow may also be determined from the study. Finally, angiography is not a screening test for renal artery stenosis because of its invasiveness and higher cost. However, angiography offers good visualization of distal and intrarenal arterial lesions.

111. A 58-year-old man receives neoadjuvant chemotherapy for muscle invasive plasmacytoid variant bladder cancer. Follow-up CT scan is shown. Metastatic evaluation is negative. The next step is:

A. ultrasound guided biopsies.
B. cystoscopy and exam under anesthesia.
C. chemotherapy and XRT.
D. diagnostic laparoscopy.
E. radical cystoprostatectomy.



ANSWER=B

Plasmacytoid variant bladder cancer is strongly associated with adverse clinicopathological features, including locally advanced T3-T4 disease. The image in this patient suggests an extravesical component of the cancer and possible circumferential tumor involvement of the rectum. Cystoscopy and examination under anesthesia are the best initial steps to determine whether this patient's cancer is resectable and the extent of the operation required (i.e., radical cystectomy vs. pelvic exenteration). Ultrasound-guided biopsies could reveal viable tumor; yet, if positive would not alter management. Combination chemotherapy and XRT is an option for symptom palliation if surgery is not feasible but would not be the next step. Diagnostic laparoscopy can help identify peritoneal implants but is not the best initial step and (*Incomplete explanation from the source*).

112. A 12-year-old adopted girl with a surgically repaired cloacal anomaly has daytime and night-time urinary incontinence since early childhood. Her physical examination shows separate urethral and vaginal orifices. She has a normal appearing back. The next step is:

A. cystoscopy.
B. vaginoscopy.
C. VCUG.
D. pelvic MRI scan.
E. lumbosacral MRI scan.

ANSWER=E

While this patient might have simple voiding dysfunction, she may have a neurogenic bladder related to her anorectal malformation. Eighteen to 35% of people with anorectal malformations have a neurogenic bladder. The cause of neurogenic bladder may be related to spinal cord anomalies that could be diagnosed with a lumbosacral MRI scan. Spinal cord anomalies may be present with a normal back examination. While cystoscopy or vaginoscopy may be helpful in diagnosing a fistula, the incontinence is not described as continuous and her examination appears normal. A pelvic MRI scan will not help elucidate the cause of her incontinence. A VCUG may show signs of a neurogenic bladder, such as a trabeculated bladder, but will not identify the etiology.

113. A 17-year-old girl with spina bifida was treated for a bladder calculus. She uses polyethylene glycol (Miralax™) for bowel management and catheterizes her augmented bladder through an appendicovesicostomy every four hours. Stone analysis is 80% ammonium acid urate and 20% carbonate apatite. The next step is:

A. N-acetylcysteine irrigation.
B. evaluate catheterization schedule.
C. evaluate bowel regimen.
D. intravesical gentamicin irrigation.
E. oral antibiotic prophylaxis.

ANSWER=C

This patient with spina bifida uses laxatives to help with her bowels and has a stone that is predominantly ammonium urate. Laxative abuse is often associated with ammonium urate stones. N-acetylcysteine irrigation has not been shown to be effective for the prevention of bladder stones. Intravesical gentamicin irrigations and treatment of recurrent UTI may be useful in cases of struvite stones. Her bowel regimen must be questioned to assess if she is using the laxative appropriately. While she may not catheterize on a strict schedule, this would not likely lead to an ammonium urate stone.

114. In a man with metastatic prostate cancer, the finding of a germline mutation in DNA-repair gene(s) is associated with:

A. age <60 years.
B. family history of lung cancer.
C. family history of breast and ovarian cancer.
D. non-Hispanic white race.
E. prior XRT.

ANSWER=C

There is an increased risk of germline mutations in DNA-repair genes, such as BRCA2, ATM, CHEK2, and BRCA1, in men with advanced and metastatic prostate cancer. In localized disease, the risk is < 5% while the incidence is 12% in men with metastatic prostate cancer. The risk is increased in those with a family history of breast, ovarian, and pancreatic cancer, but is not associated with younger age, family history of lung cancer, race, and prior treatment.

115. The structure most likely to be injured during robotic sacrocolpopexy is the:

A. left common iliac vein.
B. right common iliac vein.
C. ureter.
D. iliac artery.
E. median sacral artery.

ANSWER=A

A randomized trial of robotic versus laparoscopic sacrocolpopexy demonstrated a 3% rate of left iliac venotomy. There were no

ureteral injuries. Similarly, an anatomic study of cadavers correlated to CT scan findings demonstrated that the average distance from the sacral promontory to the left common iliac vein was 2.7 cm, ranging from 0.95 to 4.75 cm. The pulsatile iliac arteries are more easily identified relative to the iliac veins, which are compressed with dehydration and insufflation pressures. Although the median sacral artery is also in close proximity, it is a small vessel and crosses over the left common iliac vein. Damage to the left common iliac vein would cause an urgent situation to gain vascular control, whereas control of the smaller artery may be accomplished by bipolar cautery or clip placement.

116. Compared to conventional fractionation, moderate hypofractionation XRT in the treatment of localized prostate cancer:
A. involves a greater XRT dose per treatment.
B. decreases acute gastrointestinal toxicity.
C. increases late genitourinary toxicity.
D. improves biochemical recurrence-free survival.
E. should not be offered to patients with high-risk disease.
ANSWER=A
The concept of hypofractionation for prostate cancer treatment is to deliver higher fraction sizes per treatment, which in turns shortens treatment duration, and thereby confers favorable implications for patient convenience, cost, and resource utilization. Specifically, conventional XRT fractionation involves a fraction size of 180 to 200 cGy, while moderate hypofractionation is defined as a fraction size between 240 cGy and 340 cGy. Multiple prospective randomized trials have compared moderate hypofractionation to conventional fractionation and have reported no statistically significant difference in cancer outcomes. The toxicity of moderate hypofractionation versus conventional fractionation has likewise been assessed from clinical trial results, with similar rates of acute and late genitourinary toxicity consistently reported from these series. Meanwhile, mildly increased risks of acute gastrointestinal (GI) toxicity have been reported with moderate hypofractionation, with similar late rates of GI toxicity. These trials have included patients across the spectrum of disease risk, with high-risk patients comprising nearly 20% of the studied populations to date, and no evidence of a significant interaction between treatment effect and risk group. As such, per current ASTRO/ASCO/AUA guidance, moderate hypofractionation should be offered to men with high-risk prostate cancer receiving external beam XRT (EBRT) to the prostate as long as the intended treatment does not include the pelvic lymph nodes, as the clinical target volume in the majority of studies evaluating moderate hypofractionation did not include the pelvic lymph nodes.

117. According to the AUA Guideline on the Evaluation and Management of Testosterone Deficiency, testosterone therapy significantly increases:
A. bone mineral density.
B. cognitive function.
C. risk of diabetes mellitus.
D. energy.
E. lipids.
ANSWER=A
In clinical trials, patients with testosterone deficiency have been found to have statistically significant improvements in measures of erectile function, libido, anemia, bone mineral density, lean body mass, and depressive symptoms after initiating hormonal therapy. The existing data is not conclusive, however, in the changes that testosterone therapy brings about in numerous other parameters, including cognitive function, measures of diabetes mellitus, energy, fatigue, lipid profiles, and quality of life measures. It is possible that with additional clinical investigation, significant, measurable improvements in these symptoms with testosterone therapy may be demonstrated. However, until that time, patients should be cautioned about the inconclusive nature of testosterone therapy on these domains.

118. Therapeutic phlebotomy is indicated for men on long-term testosterone therapy with:
A. total testosterone: normal; free testosterone: elevated; hematocrit: 55%.
B. total testosterone: elevated; free testosterone: elevated; hematocrit: 55%.
C. total testosterone: low; free testosterone: low; hematocrit: 54%.
D. total testosterone: elevated; free testosterone: normal; hematocrit: 54%.
E. total testosterone: low; free testosterone: elevated; hematocrit: 52%.
ANSWER=C
Testosterone therapy can be a cause of erythrocytosis and possible thrombotic complications. Therefore, a hematocrit >/=54% warrants intervention. Men with an elevated hematocrit of 54% or higher and on-treatment low or normal total and free testosterone levels should be referred to a hematologist for further evaluation and possible coordination of phlebotomy. In this scenario, reduction of the testosterone dosage will most likely result in recurrence of hypogonadal symptoms. In men with elevated hematocrit and high on-treatment testosterone levels, dose adjustment or a temporary break in treatment with retesting should be attempted as first-line management. Similarly, in men with elevated hematocrit and low or normal on treatment testosterone levels, measuring sex hormone-binding globulin (SHBG) level and a free testosterone level using a reliable assay is suggested. If SHBG levels are low and free testosterone levels are high, dose adjustment of the testosterone therapy should be considered.

119. According to the AUA guideline on evaluation and management of testosterone deficiency, a symptomatic man found to have unexplained hypergonadotropic hypogonadism should have:
A. Y-chromosome testing for microdeletions.
B. cystic fibrosis transmembrane conductance regulator (CFTR) testing.
C. karyotype testing
D. pituitary MRI scan.
E. brain CT scan.
ANSWER=C
According to the AUA Guideline on evaluation and management of testosterone deficiency, a symptomatic man found to have unexplained hypergonadotropic hypogonadism should undergo karyotype testing. The rationale for this recommendation is to rule out Klinefelter syndrome, which affects 1:650 new-born boys and is characterized by hypergonadotropic hypogonadism. In addition to hypogonadism, males with Klinefelter syndrome are at increased risk for gynecomastia, visceral obesity, osteoporosis, male infertility, learning problems, breast cancer, and extragonadal germ cell tumors. Y-chromosome testing for microdeletions is ordered in men with sperm concentrations < 5 million sperm/mL; however, no information has been provided on this patient's semen parameters. Cystic fibrosis transmembrane conductance regulator (CFTR) gene mutation testing is ordered in men suspected of having congenital bilateral absence of the vas deferens, however, there is no mention of such a physical examination finding in this patient. While pituitary imaging might ultimately be pursued if karyotype testing comes back normal, it would not be the next step. Men with hypergonadotropic hypogonadism who are diagnosed with Klinefelter syndrome do not routinely need to undergo central nervous system (CNS) imaging.

120. Participants in an opioid use disorder study were randomized to placebo or new drug. The primary endpoint was the presence of any positive urine samples for each

participant during the study. The researcher also wants to know if tobacco use impacts the dependent variable. The best statistical test is:
A. ANOVA (analysis of variance).
B. logistic regression.
C. point biserial correlation.
D. chi-square test.
E. multiple linear regression.
ANSWER=B
The dependent variable, presence of any positive urine samples, is a categorical variable. The study design is a group design. The researcher is interested in the association of multiple variables related to the dependent variable. Because the dependent variable is categorical, the best statistical test is logistic regression. If the dependent variable had been continuous, multiple linear regression would have been correct. Chi-square test is used for a categorical dependent variable and group study design; it would have been the appropriate answer if the researcher was not considering multiple independent variables. Analysis of variance (ANOVA) compares means of continuous variables of three or more groups. Point-biserial correlation assesses the relationship between two variables within a group when the independent variable is continues and dependant variable is binary.

121. A 45-year-old woman with a personal and maternal history of hysterectomy for uterine fibroids undergoes partial nephrectomy for a 3.2 cm solitary left renal mass. Pathology demonstrates pT1a high-grade papillary RCC with a positive surgical margin. Postoperative serum creatinine is 1.0 mg/dL and staging evaluation is negative. The next step is:
A. surveillance.
B. pazopanib.
C. percutaneous renal cryoablation.
D. repeat partial nephrectomy.
E. radical nephrectomy with RPLND.
ANSWER=E
This patient's history is consistent with a diagnosis of Hereditary Leiomyomatosis and Renal Cell Carcinoma syndrome (HLRCC). HLRCC is caused by germline mutations in the gene for fumarate hydratase, an enzyme within the Krebs cycle. Patients with this syndrome may develop a highly aggressive form of type II papillary RCC, cutaneous leiomyomas, and, in women, uterine leiomyomas requiring hysterectomy at a young age or uterine leiomyosarcomas. RCCs in the setting of HLRCC are often solitary and have demonstrated an aggressive biologic behavior relative to the RCCs arising in the context of other hereditary syndromes, with metastases found even with small primary lesions. Recommended management for such clinically localized disease is wide local resection at the time of diagnosis. This is distinct from the “3 cm" rule which has been put forth in the setting of von-Hippel Lindau (VHL), whereby renal tumors are monitored until the largest tumor reaches 3 cm, and then surgery is undertaken. In this patient with a positive surgical margin from initial partial nephrectomy, young age, adequate renal function, and high-risk pathologic features of the tumor, radical nephrectomy with lymphadenectomy would be recommended. Indeed, although the management of patients with a positive surgical margin at partial nephrectomy has been debated, positive surgical margins among patients with high-risk tumors have been found to be associated with a significantly increased risk of disease recurrence, further supporting an aggressive approach in this setting. Conversely, surveillance would not be preferred for this patient given the high-risk of disease relapse, young age, and renal function status. Moreover, identifying the site of the positive margin and ensuring complete local tumor eradication would be extremely challenging with repeat partial nephrectomy and would not be advised, particularly in the setting of normal renal function and as HLRCC does not typically predispose patients to bilateral/multifocal renal tumors. The role of ablation in HLRCC has not been established and currently this approach is not recommended. Meanwhile, the use of systemic therapy such as pazopanib in the absence of metastatic disease as here would be considered adjuvant therapy. Adjuvant pazopanib was indeed assessed in the PROTECT trial for patients with high-risk RCC after resection. However, not only did the primary analysis from this trial find that pazopanib did not prolong disease-free survival, but, in addition, the trial was restricted to patients with clear cell or predominantly clear cell RCC, and, thereby, not applicable for this patient.

122. During a routine physical examination, a 23-month-old child is noted to have the abnormality shown. The next step is:
A. observation.
B. estrogen therapy.
C. betamethasone therapy.
D. karyotype evaluation.
E. examination under anesthesia.

ANSWER=A
The image demonstrates labial adhesions. This is the most common interlabial abnormality identified in children. This condition primarily occurs in the first two years of life. The causes may be hormonal or nonhormonal. Local irritation and tissue trauma may potentially cause them to form. Adhesions can be associated with sexual abuse, although not commonly; in such cases, additional physical findings are often noted, including hematoma and lacerations. With the rate of spontaneous resolution reported to be as high as 80% within one-year, asymptomatic labial adhesions can comfortably be observed. When necessary, treatment ranges from the topical application of estrogens or various steroids to surgical division. Unlike fusion of the labia majora, this does not represent a disorder of sex development, and thus karyotype is not indicated nor is evaluation under anesthesia.

123. The most effective means to monitor compliance with a pain management program is:
A. patient self-report.
B. pill count.
C. prescription monitoring.
D. periodic drug testing.
E. behavioral assessment.
ANSWER=D
For patients enrolled in a pain management program, biological testing of urine/serum is the single best way to monitor compliance for over-the-counter, prescribed, and illicit substance use. Although self-report, pill count, prescription monitoring and monitoring changes in behavior may also be employed, level 1

evidence demonstrates biological testing to be superior to these tools. For low-risk patients, testing one to two times per year is recommended, while increased frequency is recommended for those that are considered high risk.

124. A 22-year-old man with Crohn's disease and left-sided stage 1 seminoma is departing soon for a two-year Peace Corps assignment in a remote international location. The next step is:
A. a single dose of carboplatin.
B. three cycles of BEP.
C. 20 Gy of para-aortic XRT.
D. 30 Gy of para-aortic and ipsilateral iliac XRT.
E. RPLND.
ANSWER=A
The preferred management strategy for stage 1 seminoma in a compliant patient is surveillance. Other options include 20 Gy of XRT (interaortocaval for right-sided primary and para-aortic for left sided primary) or a single dose of carboplatin. XRT is relatively contraindicated in the setting of Crohn's disease. Three cycles of BEP are given for International Germ Cell Cancer Collaborative Group (IGCCCG) good-risk metastatic seminoma or non-seminoma. For treatment of clinical stage 2A seminoma, 30-36 Gy of radiation therapy to the upper retroperitoneal and ipsilateral iliac regions is given. RPLND is not a standard-of care option for patients with stage 1 seminoma. This patient, given his remote location and pending departure, is best managed with a single dose of carboplatin.

125. A 28-year-old man completed chemotherapy for Hodgkin's disease three months ago. He did not cryopreserve sperm in advance of treatment. He and his wife wish to begin efforts to conceive a pregnancy. His semen analysis reveals: volume 1.2 mL, 8 million sperm/mL, 5% motility, and 2% normal morphology. The next step is:
A. conceive via natural means.
B. conceive by intrauterine insemination (IUI).
C. conceive by in vitro fertilization (IVF).
D. TRUS with seminal vesicle aspiration.
E. refrain from efforts to conceive for one to two years.
ANSWER=E
This patient has oligoasthenoteratospermia, likely due to his history of recent chemotherapy. Deleterious genetic changes are common in sperm after treatment with chemotherapy, so a period of contraception use for one to two years after completion of chemotherapy is recommended. Given this recommendation, efforts at conception using ejaculated sperm at this time with natural means, intrauterine insemination, and in vitro fertilization are all contraindicated. TRUS would be indicated if he had a low ejaculate volume (< 1.0 mL) with low motility. However, his ejaculate volume is normal, and the low motility, along with the deficits in the other semen parameters, are likely due to his recent chemotherapy. Therefore, TRUS is not indicated at this time.

126. Placement of a ureteral stent in a chronically obstructed system (greater than four weeks) will result in:
A. an increase in ureteral contractility.
B. a decrease in ureteral contractility.
C. atrophy of the ureteral mucosa.
D. atrophy of the ureteral smooth muscle.
E. a decrease in intrapelvic pressure.
ANSWER=B
A number of changes occur after placement of a ureteral stent, including hyperplasia and inflammation of the urothelium, smooth muscle hypertrophy, increased intrapelvic pressure (transmission of bladder pressures to upper tracts), decrease in ureteral contractility, and VUR. Decreased ureteral contractility contributes to VUR, which may have implications in infected systems in the setting of bladder outlet obstruction.

127. A three-month-old boy had a lumbar myelomeningocele closed at birth. The finding associated with the potential for detrusor-sphincter dyssynergia is:
A. the level of the lesion.
B. an intact bulbocavernosus reflex.
C. lower extremity movement.
D. spontaneous voiding.
E. decreased anal sphincter tone.
ANSWER=B
Preservation of the sacral nerve arcs, as indicated by an intact bulbocavernosus reflex, suggests the potential for detrusor-sphincter dyssynergia. While other parameters such as lower extremity movement, spontaneous voiding, and normal anal sphincter tone may also suggest the presence of intact sacral arcs, the bulbocavernosus reflex is the most clinically specific. Unlike spinal cord injury, in patients with lumbosacral spina bifida, neural function and urodynamic findings cannot be predicted by the level of the lesion.

128. Compared to extracorporeal urinary diversion, intracorporeal robotic-assisted laparoscopic diversion is associated with:
A. lower blood loss.
B. shorter operative time.
C. decreased risk of reoperation.
D. shorter length of hospital stay.
E. decreased gastrointestinal complications.
ANSWER=E
As utilization of robotic-assisted radical cystectomy has evolved, increasing attention has focused on the technique of urinary reconstruction, specifically to evaluate intracorporeal rather than extracorporeal diversion. While a number of speculative benefits have been proposed for the intracorporeal approach, comparative data from prospective randomized trials are lacking. Existing, retrospective data have found a decreased risk of gastrointestinal complications among patients undergoing intracorporeal versus extracorporeal diversion (10% versus 23%; p=0.086). Likewise, this study reported no statistically significant difference in the rate of return to the operating room within 30 days of cystectomy for patients undergoing intracorporeal versus extracorporeal diversion.

129. High-intensity focused ultrasound (HIFU) for localized prostate cancer is contraindicated in men with a(n):
A. age <55 years.
B. Gleason score > 7.
C. median lobe.
D. prior TURP.
E. previous abdominoperineal resection.
ANSWER=E
HIFU (high-intensity focused ultrasound) is a transrectal ablative treatment for prostate cancer. Age, PSA level, and Gleason score are not contraindications. For treatment of anterior tumors or whole-gland ablation, lengthy distances between the transducer and cancer can preclude effective ablation. At some centers, routine pre-HIFU TURP is performed to lower the likelihood of urinary retention. Median lobes are not a contraindication although very large obstructing median lobes are a relative contraindication and sometimes pre-HIFU TURP can be considered. Since HIFU is performed transrectally, previous abdominoperineal resection is an absolute contraindication.

130. The most likely cause of renal insufficiency in a 55-year-old man with a fractional excretion of sodium (FENa) of 2% is:
A. hypovolemia.
B. congestive heart failure.
C. renal artery stenosis.
D. acute tubular necrosis.
E. bladder outlet obstruction.

ANSWER=D
A fractional excretion of sodium (FENa) is calculated to differentiate between prerenal, intrinsic and postrenal injury. The formula is: FENa = (PCr x UNa)/(PNa x UCr) where PCr is the serum creatinine level, UNa is the urine sodium level, PNa is the serum sodium level, and UCr is the urine creatinine level. FENa values < 1% indicate a pre-renal etiology such as sepsis, hypovolemia, congestive heart failure or renal artery stenosis. A FENa of >/= 2% is consistent with acute renal injury such as acute interstitial nephritis, acute tubular necrosis, or glomerulonephritis. Finally, a FENa of more than 4% indicates a post-renal etiology of acute renal failure, such as bilateral ureteral obstruction, bladder stones, bladder outlet obstruction or urethral stricture.

131. A 26-year-old sexually active man has a painful 1.0 cm solitary ulcer on the glans penis which is culture positive for H. ducreyi. The next step is:
A. doxycycline.
B. azithromycin.
C. benzathine penicillin G.
D. acyclovir.
E. ciprofloxacin.
ANSWER=B
The patient's findings are classic for chancroid which is due to H. ducreyi. It affects men three times more than women. It is associated with inguinal adenopathy that is typically unilateral and tender with a tendency to become suppurative and fistulize. Single-dose treatment with azithromycin 1 gram orally or ceftriaxone 250 mg intramuscularly is first line therapy. While ciprofloxacin can be a secondary regimen, resistance to ciprofloxacin has been reported in some regions. Acyclovir, penicillin, or doxycycline are not indicated. Patients should be reexamined in five to seven days. Sexual partners should be treated if sexual relations were held within two weeks before or during the eruption of the ulcer.

132. A 62-year-old man underwent TURBT of a 1.5 cm, solitary, low-grade urothelial carcinoma (Ta). Baseline CT urogram is normal. Surveillance cystoscopy at three months is normal. The next step is:
A. cystoscopy in three months.
B. cystoscopy in nine months.
C. cystoscopy and cytology in nine months.
D. cystoscopy and CT urogram in nine months.
E. induction BCG.
ANSWER=B
This patient has low-risk, non-muscle invasive bladder cancer. The most recent SUO/AUA Guidelines for Non-Muscle Invasive Bladder Cancer recommends clinicians minimize the use of routine surveillance procedures and ancillary tests in this setting. Urinary markers (i.e., cytology) should not be used when surveillance cystoscopy is normal. In asymptomatic patients with a history of low-risk disease, routine surveillance upper tract imaging is not indicated. Furthermore, following an initial surveillance cystoscopy that is negative, subsequent surveillance cystoscopy is recommended six to nine months later and then annually thereafter. Surveillance beyond five years in the low-risk setting, and in the absence of recurrence, should be based on shared-decision making between the patient and clinician. Whereas the patient described would be an ideal candidate for immediate post-resection intravesical chemotherapy, induction BCG as well as intravesical chemotherapy are not standard of care for patients with low-risk urothelial carcinoma.

133. An eight-year-old boy had PUV resected as a neonate. He has persistent incontinence and voids 2.5 L/day. The next step is:
A. reduce fluid intake to 1.5 L/day.
B. timed, double voiding.
C. imipramine.
D. DDAVP.
E. onabotulinumtoxinA.
ANSWER=B
Urinary concentrating defects following obstructive lesions may produce nephrogenic diabetes insipidus. This is often seen with PUV. It may be extremely difficult to reduce urinary volumes due to a fixed concentrating defect that is unresponsive to DDAVP. With large urine volumes, this boy is likely experiencing overflow incontinence and possibly poor bladder contractility. Therefore, antimuscarinics, onabotulinumtoxinA or imipramine would be unlikely to improve his urinary incontinence. With a fixed concentrating defect, fluid restriction may be dangerous, risking severe dehydration. Timed, double voiding would be the best initial treatment to aid in bladder emptying and would potentially reduce his incontinence.

134. A 61-year-old woman has progression of disease during treatment with pazopanib for metastatic clear cell RCC. She takes glucocorticoids for lupus and has moderate chronic kidney disease but is otherwise healthy and minimally symptomatic. The next step is:
A. everolimus.
B. sunitinib.
C. cabozantinib.
D. nivolumab.
E. axitinib and pembrolizumab.
ANSWER=C
The phase III METEOR trial compared everolimus versus cabozantinib for patients with disease progression after previous tyrosine kinase inhibitor therapy (as is the case here) and demonstrated a significantly improved overall survival with cabozantinib (21.4 months) versus everolimus (16.5 months). Cabozantinib was also associated with a significantly improved objective response rate and progression-free survival. Based on these trial findings, cabozantinib is listed by the National Comprehensive Cancer Network (NCCN) as a category 1 preferred option for patients with progression after tyrosine kinase inhibitor therapy, and specifically should be used preferentially over everolimus in eligible patients. Further, cabozantinib can be used in patients with chronic kidney disease. Nivolumab is an immune checkpoint inhibitor antibody that blocks the interaction between PD-1 and its ligands. Nivolumab also has category 1 designation in this setting by the NCCN duo to the results from (*Incomplete explanation from the source*).

135. A 35-year-old man with a one-year history of infertility consistently has normal ejaculate volume cryptozoospermia, with rare, non-motile sperm found in the centrifuged semen pellet. Vitality testing reveals 100% viable sperm. His serum FSH level is 20 mIU/mL. The next step is:
A. timed intercourse.
B. intrauterine insemination (IUI).
C. in vitro fertilization with intracytoplasmic sperm injection (IVF/ICSI).
D. microdissection testicular sperm extraction (micro-TESE).
E. percutaneous epididymal sperm aspiration (PESA).
ANSWER=C
This patient consistently has severely low numbers of non-motile sperm that are alive based on vitality testing. These findings, in conjunction with his elevated serum FSH level, suggest that the etiology of his infertility is impaired spermatogenesis rather than a partial, high-grade obstruction within his reproductive tract. Given these findings, the next step is in vitro fertilization (IVF) with intracytoplasmic sperm injection (ICSI). Timed intercourse and intrauterine insemination (IUI) are not options given the severely low sperm concentration and, more importantly, the lack of sperm motility. The sperm will be unable to travel to the oocyte and achieve fertilization given their lack of movement. However, given that the sperm are viable, IVF/ICSI is a good

next step. With IVF/ICSI, a single spermatozoon is injected into an oocyte under microscopic magnification with a micropipette. While microdissection testicular sperm extraction (micro-TESE) is an option, it is premature to pursue this approach without first using the ejaculated sperm with IVF/ICSI. Percutaneous epididymal sperm aspiration (PESA) is a commonly used approach to remove sperm from the epididymis in men with an obstructive pattern. These sperm are then typically used in IVF/ICSI. However, given the lack of obstruction in this patient and the presence of sperm in the ejaculate, PESA does not have a role for this man.

136. A contraindication to partial orchiectomy in a patient with a testis mass concerning for germ cell tumor is:
A. microlithiasis.
B. oligospermia.
C. significant hypogonadism.
D. anormal contralateral testicle.
E. tumor size 1.5 cm.
ANSWER=C
Partial orchiectomy may be indicated in patients with bilateral testicular tumors or a tumor in a solitary testicle who desire to preserve hormonal and fertility function. Preoperatively, tumors should ideally be < 2 cm in diameter. The primary goal of testis sparing surgery is preservation of hormonal function, therefore, preoperative testosterone levels should be normal. Hypogonadism by definition has low testosterone levels, regardless of the etiology, and, therefore, there would be no indication to preserve testicular tissue by testis sparing surgery for those with significant hypogonadism, and a complete orchiectomy should be performed. However, one could argue in favor of testis sparing surgery for mild cases of hypogonadism. Testis sparing surgery is an option in selected patients with normal contralateral testicles, particularly when lesions are < 1cm in diameter as more than half of such patients have benign neoplasms (i.e., benign gonadal stromal tumors). Infertility or subfertility alone is not a contraindication to partial orchiectomy as the primary goal is the preservation of testosterone production. Microlithiasis in the presence of a testis tumor is associated with germ cell neoplasia in situ (GCNIS), but it does not preclude patients from undergoing partial orchiectomy. GCNIS can be managed with adjuvant XRT, which leads to infertility and increases the risk of hypogonadism.

137. A 57-year-old diabetic woman has urinary frequency, slow urinary stream, and recurrent symptomatic UTIs. Her physical examination reveals no prolapse, decreased perineal sensation, and intact sphincter tone. Urinalysis is normal and PVR is 425 mL. She refuses to perform CIC. The next step is:
A. Credé or Valsalva voiding.
B. bethanechol.
C. indwelling urethral catheter.
D. onabotulinumtoxinA injection into urethral sphincter.
E. sacral neuromodulation.
ANSWER=E
This patient is classified as having high-risk chronic urinary retention (CUR) based upon the AUA 2016 White paper entitled Non-Neurogenic Chronic Urinary Retention: Consensus Definition, Management Strategies, and Future Opportunities. She should be offered treatment due to symptomatic UTIs and LUTS. The etiology of her retention is likely detrusor underactivity (DUA). Sacral neuromodulation has been used with good efficacy in patients with non-obstructive urinary retention and detrusor underactivity. Diabetes is not a contraindication to neuromodulation. Credé or Valsalva voiding is most effective in patients with DUA and an incompetent sphincter. This patient with diabetes likely has DUA due to myogenic and/or neurogenic causes affecting afferent pathways, and thus Credé voiding is not in her best interest because intravesical pressures may be too high in the presence of a competent sphincter. Bethanechol is a muscarinic receptor agonist but is not receptor subtype-selective and, therefore, can be associated with significant dose-dependent systemic side effects including cardiac depression, resulting in cardiac arrest. Additionally, bethanechol has not been shown to be effective in patients with DUA. Insertion of an indwelling urethral catheter is not the best initial option. In addition, if she prefers to manage her lower urinary tract with an indwelling catheter, a suprapubic tube would be a better long-term choice due to concerns of urethral erosion with a urethral catheter. Injection of onabotulinumtoxinA into the urethral sphincter is most effective in patients with sphincter dyssynergia. In DUA it can relax the urethral sphincter mechanism and overcome reflex inhibition of detrusor function, thereby facilitating Valsalva voiding. However, the effect is short-lived and currently not approved for this indication.

138. A 33-year-old man requests a refill of hydromorphone recently given to him for flank pain associated with a passed ureteral stone. The next step is to:
A. request medical records from emergency room.
B. review state prescription drug monitoring program.
C. review patient self-reported diary.
D. prescribe extended-release narcotic.
E. prescribe benzodiazepine.
ANSWER=B
Clinicians should review the patient's history of controlled substance prescriptions using state prescription drug monitoring program (PDMP) data to determine whether the patient is receiving opioid dosages or dangerous combinations that put him or her at high risk for overdose. Clinicians should review PDMP data when starting opioid therapy for chronic pain and periodically during opioid therapy for chronic pain, ranging from every prescription to every three months. Although reviewing records will be helpful, the patient may have multiple sources of prescriptions, and thus the physician should rely more on the PDMP than the medical records. Patient self-reported diary would come more in play with treatment of chronic pain. Finally, acute pain should be managed with immediate-release and not long-acting narcotics. Concurrent benzodiazepine and opioid prescribing should be avoided.

139. After failing medical therapy, a 77-year-old man seeks surgical correction of refractory LUTS. He takes apixaban for atrial fibrillation. TRUS reveals a 110-gram prostate and an intravesical lobe. The next step is:
A. TURP.
B. prostatic urethral lift.
C. TUIP.
D. laser prostatectomy.
E. water ablation therapy.
ANSWER=D
variety of therapies are available for men requiring intervention for bladder outlet obstruction secondary to an enlarged prostate that must continue with anticoagulation therapy including HoLEP, PVP, and ThuLEP. Laser prostatectomy has better coagulative properties than TURP and would, therefore, be preferred for patients who are at risk of bleeding. Although bipolar TURP is associated with less blood loss than TURP, it is inferior to laser prostatectomy in that regard. Prostatic urethral lift improves LUTS by altering prostate morphology and not ablating tissue, thereby lowering risk of bleeding. However, it is indicated for glands 100 grams or less. Water ablation therapy is indicated for glands of 80 grams or less. TUIP is also associated with less blood loss but is indicated for prostates less than 30 grams.

140. A patient-related risk factor for postoperative pulmonary complications includes:
A. diabetes mellitus.
B. hypertension.
C. lymphedema.
D. male sex.

E. weight loss.
ANSWER=E
Postoperative pulmonary complications occur in approximately 6% of patients after major abdominal surgery, and these adverse outcomes are linked with increased in lengths of stay, readmission rates, overall costs, and mortality. Careful identification of risk factors preoperatively can help providers mitigate unfavorable outcomes. Procedural risk factors for postoperative pulmonary outcomes include surgeries longer than three to four hours, abdominal operations, and emergency surgical procedures. Patient-related risk factors include: age > 60 years old, chronic lung disease, cigarette smoking, congestive heart failure, functional dependence (either partial or total dependence) for activities of daily living, higher ASA classification, obesity, asthma, obstructive sleep apnea, impaired sensorium, alcohol use, and weight loss. Preoperative weight loss is often associated with substantial sarcopenia (muscle loss), which can cause generalized weakness. Preoperative weight loss, combined with the weight loss commonly seen in the postoperative period, can cumulatively result in increased of risk pulmonary complications. Clinicians can use the ASC NSQIP risk calculator in order to estimate the risk of postoperative respiratory failure. Identification and discussion of postoperative pulmonary risks during the preoperative assessment is important for informed consent and also for facilitating preoperative patient pulmonary optimization.

141. A patient with metastatic urothelial carcinoma has disease progression after cisplatin-based chemotherapy. Selection of subsequent therapy can be aided by assessment of:
A. p53.
B. nectin-4.
C. androgen receptor.
D. fibroblast growth factor receptor.
E. DNA mismatch repair genes.
ANSWER=D
Tremendous progress has been made with respect to understanding the pathogenesis of urothelial carcinoma (i.e., The Cancer Genome Atlas - TCGA) as well as treating advanced disease (i.e., immune checkpoint inhibitors). In April 2019, the FDA granted accelerated approval for erdafitinib for the treatment of adult patients with locally advanced or metastatic urothelial carcinoma of the bladder. Erdafitinib is a fibroblast growth factor receptor (FGFR) kinase inhibitor. Approval was based on a phase 2 trial of 99 patients receiving erdafitinib for cancer progression after prior treatment (chemotherapy and/or immunotherapy). The objective response rate was 40% with median duration of overall survival at 13.8 months. Of note, all patients were screened and required to have one FGFR3 mutation or FGFR2/3 fusion. Previously, p53 status was thought to be predictive for response to chemotherapy but clinical trials have not proven its utility as a biomarker. Nectin-4 is the target for the newly approved drug enfortumab vedotin, but this is ubiquitously expressed in urothelial carcinoma and thus not useful for selecting patients for treatment. Similarly, while mismatch repair and androgen pathways may play a role in urothelial carcinoma, there is no evidence for their use in selecting patients for therapy.

142. Hyperchloremic metabolic acidosis occurs most frequently after:
A. ileal conduit.
B. jejunal conduit.
C. ureterosigmoidostomy.
D. orthotopic ileal neobladder.
E. Indiana pouch.
ANSWER=C
Hyperchloremic metabolic acidosis can occur after incorporation of either ileum or colon in the urinary tract. The severity is dependent on the amount of bowel incorporated as well as whether the diversion is continent (or incontinent). Thus, this can be seen with all these diversions except the jejunal conduit, which is associated with hyperkalemic, hypochloremic metabolic acidosis. Lower urinary tract reconstruction that involves diverting the ureters into the intact sigmoid is associated with a high rate of metabolic acidosis (80%) and more severe metabolic derangement, often requiring treatment with oral bicarbonate as well as potassium replacement. This is one of the primary reasons that ureterosigmoidostomy is not performed any longer, along with an increased risk of secondary malignancy.

143. A 35-year-old infertile man has normal ejaculate volume azoospermia, a serum FSH level of 23 mIU/mL, and a serum testosterone level of 315 ng/dL. The next step is:
A. Kallmann syndrome interval gene (KALIG) mutation testing.
B. cystic fibrosis transmembrane conductance regulator (CFTR) gene mutation testing.
C. semen fructose testing.
D. semen centrifugation.
E. post-ejaculate urinalysis testing.
ANSWER=D
Approximately 23% of men who are suspected of having non-obstructive azoospermia on semen analysis testing are actually found to have low numbers of sperm in the ejaculate with further work-up. These sperm are detected through the process of semen centrifugation and subsequent microscopic inspection of the resultant pellet at the bottom of the centrifuge tube. The semen centrifugation process is a critical component of the evaluation of the azoospermic patient because these rare sperm can potentially be used for in vitro fertilization/intracytoplasmic sperm injection (IVF/ICSI). The use of these sperm can spare the patient an invasive surgical sperm extraction procedure, such as microdissection testicular sperm extraction (micro-TESE). Kallmann syndrome interval gene (KALIG) gene mutation testing is indicated in men suspected of having Kallmann syndrome, which is characterized by low serum LH and FSH levels and low serum testosterone levels (hypogonadotropic hypogonadism). This patient has elevated FSH and normal testosterone, so KALIG gene mutation testing is not indicated. Cystic fibrosis transmembrane conductance regulator (CFTR) gene mutation testing is indicated in men suspected of having congenital unilateral (CUAVD) or congenital bilateral absence of the vas deferens (CBAVD). Men with CUAVD typically have sperm in the ejaculate, and men with CBAVD commonly have low ejaculate volume azoospermia; this patient has neither of those findings. Semen fructose testing can be offered when ejaculatory duct obstruction (EjDO) is suspected; patients with EjDO typically have low ejaculate volume azoospermia, which this patient does not exhibit. Finally, postejaculate urinalysis testing is indicated when the ejaculate volume is abnormally low (< 1.0 mL), which this patient does not have.

144. A 45-year-old asymptomatic HIV-positive man should undergo a:
A. serum PSA test.
B. serum testosterone test.
C. urinalysis.
D. urine cytology.
E. bladder scan.
ANSWER=B
According to the AUA Testosterone Deficiency Guidelines, numerous patient conditions should prompt serum testosterone level testing, even in the absence of symptoms. These conditions include unexplained anemia, bone density loss, diabetes, exposure to chemotherapy or testicular XRT, HIV/AIDS, chronic narcotic use, male infertility, pituitary dysfunction, and chronic corticosteroid use. Men seropositive for HIV have a higher likelihood of testosterone deficiency than the general population, with some cohort studies showing testosterone deficiency rates of 17-38%. The etiology of testosterone deficiency in these patients is believed to be attributable to numerous factors, including

cytokine activity, malnutrition, opportunistic infections/acute illnesses, and side effects of HIV medications. Testosterone measurement is important, because HIV-positive patients with testosterone deficiency have a higher risk of elevated HbA1c levels and also a higher risk for cardiovascular disease when compared to HIV-positive patients with normal testosterone levels. Additionally, several randomized, controlled studies have demonstrated that testosterone replacement therapy in HIV-positive men provides benefits in terms of quality of life measures, as well as muscle strength, size, and volume. Serum PSA testing in HIV-positive men should follow guidance provided by the AUA Guideline on the "Early Detection of Prostate Cancer," and PSA testing is not indicated based on the history provided. Urinalysis, urine cytology, and bladder scan are not routinely recommended in HIV-positive men without other concomitant indications.

145. A one-month-old girl with congenital heart disease had an episode of urosepsis. She has a solitary kidney with upper pole hydroureteronephrosis. Her renal scan shows 33% function in the upper pole with ureterovesical junction (UVJ) obstruction and a massively dilated upper pole ureter. The lower pole system is normal. VCUG shows no reflux. The next step is antibiotic prophylaxis and:
A. percutaneous nephrostomy.
B. tapered upper pole reimplant.
C. upper pole distal cutaneous ureterostomy.
D. upper pole to lower pole distal ureteroureterostomy.
E. upper pole heminephroureterectomy.
ANSWER=C
This infant has an obstructed upper pole ureter in a solitary kidney and had urosepsis. Surgical intervention is indicated. Her age and cardiac disease make prolonged reconstructive surgery risky. Since she has a significant portion of her renal function in the upper pole, a heminephrectomy is incorrect. Anastomosis of the massively dilated upper pole system to the normal lower pole system can be technically challenging (especially in the face of recent infection) either at the level of the renal pelvis or the ureter. Percutaneous nephrostomy tubes can be a short-term solution in a critically ill child, but they have complications including chronic infection, calculus formation, and displacement. Tapered reimplantation in a child of this age is technically challenging because of the small bladder. The best treatment is a cutaneous ureterostomy that will allow adequate drainage, prevent infection until definitive surgery is safe, and can be done expeditiously. It will also allow the dilated upper pole system to decompress and reconfigure the ureter.

146. A 35-year-old man with a one-year history of infertility has a normal scrotal examination and a semen analysis which reveals: ejaculate volume of 5 mL, sperm concentration of 6 million sperm/mL, 33% motility, 2% normal morphology. Repeat semen analysis reveals similar results. His serum testosterone is 310 ng/dL and estradiol is 25 pg/mL (normal < 57 pg/mL). A scrotal ultrasound reveals a small left varicocele. The next step is:
A. clomiphene citrate.
B. anastrozole.
C. left microsurgical varicocelectomy.
D. intrauterine insemination (IUI).
E. in vitro fertilization (IVF).
ANSWER=D
This patient has oligoasthenoteratospermia with a total motile sperm count (ejaculate volume x sperm concentration x % sperm motility) = 10 million moving sperm in the ejaculate. A total motile sperm count > 5 million is typically the threshold to facilitate pursuit of IUI, which is the next step for this patient. Success rates per IUI cycle are approximately 5-15%, and couples typically pursue no more than three to four cycles due to the diminishing likelihood of success after that number of attempts. The patient has normal testosterone and estradiol levels, so there is no role for either clomiphene citrate or anastrozole therapy. Based on how the varicocele was diagnosed, not present on physical exam and only identified on ultrasound, this is defined as a subclinical varicocele. Based on an abundance of literature, there is no substantial benefit and thus no role for correction of the subclinical left varicocele. IVF is not the next step, given that he has enough motile sperm for IUI.

147. The risk of postoperative delirium is increased by a history of:
A. atherosclerosis.
B. diabetes mellitus.
C. hypertension.
D. obesity.
E. renal insufficiency.
ANSWER=E
Postoperative delirium is a common complication after surgery in patients > 65 years old, affecting approximately 10% of elderly patients undergoing major, elective, non-cardiac surgical procedures. The greatest risk factors for postoperative delirium include a history of cognitive impairment and dementia. However, other conditions can also increase the risk of this condition, including a history of depression, anemia, renal insufficiency, poor nutrition, inadequately controlled pain, sleep deprivation, and dehydration. Identifying and, when possible, modifying risk factors in the preoperative period can help mitigate this complication. Postoperative delirium is linked with longer lengths of hospital stay and an increased risk of other complications, including mortality. While atherosclerosis, diabetes mellitus, hypertension, and obesity are linked to many other postoperative complications, they are not specifically associated with postoperative delirium.

148. Regulatory approval of enfortumab vedotin for urothelial carcinoma was based on a study of patients:
A. prior to cystectomy.
B. prior to platinum chemotherapy.
C. with progression after platinum chemotherapy.
D. with progression after immune checkpoint inhibitor.
E. with progression after platinum-based chemotherapy and immune checkpoint inhibitor.
ANSWER=E
Enfortumab vedotin is an antibody-drug conjugate that is directed against nectin-4, a cell surface protein, which is highly expressed in bladder cancer. The mechanism of action is via internalization after binding, with subsequent release of monomethyl auristatin E (MMAE) into the cell resulting in cell cycle arrest and apoptosis. The FDA granted accelerated approval to enfortumab for the treatment of adults with locally advanced or metastatic urothelial carcinoma who have previously received an immune checkpoint inhibitor (PD-1/L1) and platinum-based chemotherapy. In this specific population (i.e., previously treated with chemotherapy and immune checkpoint inhibitor), enfortumab had an objective response rate of 44% with a 12% complete response rate. The median duration of response was 7.6 months.

149. Opioid abuse can impair male fertility via:
A. estradiol excess.
B. prolactin excess.
C. secondary hypogonadism.
D. sperm aneuploidy.
E. sperm DNA damage.
ANSWER=C
Opioid abuse is an important public health concern, resulting in substantial morbidity and mortality. One potential adverse effect experienced by abusers is the suppression of pituitary LH secretion, via pathways mediated by the hypothalamus. Decreased LH secretion results in decreased Leydig cell production of testosterone, a condition called "hypogonadotropic

hypogonadism" or "secondary hypogonadism." Reduced intratesticular testosterone levels, in turn, commonly result in reduced spermatogenesis and male factor infertility. Upon opioid cessation, LH and testosterone secretion and spermatogenesis typically improve within weeks to months. Estradiol excess and prolactin excess are not commonly seen in the setting of opioid abuse. Numerical sperm chromosomal changes (aneuploidy) and sperm DNA damage are not linked with opioid abuse.

150. A five-year-old boy with hematuria has a 2 cm non-obstructing right distal ureteral stone. The next step is:

A. observation.
B. SWL.
C. ureteroscopy and lithotripsy.
D. percutaneous antegrade ureteroscopy and lithotripsy.
E. ureterolithotomy.

ANSWER=E

This five-year-old boy has a 2 cm distal right ureteral calculus that is relatively asymptomatic. A large stone of this size is unlikely to pass spontaneously. Observation would not be an option. The size and location of the calculus in this boy make SWL and endoscopic approaches difficult and unlikely to be successful in achieving a stone-free state. In addition, there would be significant risk of retained stone fragment(s) and/or ureteral injury with either of these modalities. Open ureterolithotomy via lower abdominal muscle splitting (Gibson) incision or laparoscopic/robotic ureterolithotomy would be most likely to achieve a stone free state, least likely to cause complication, such as urethral stricture, and may also allow inspection of the distal ureter for any anatomical abnormality predisposing to stone formation in this location.